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# BlackDiamond 8800 Series Switches Hardware Installation Guide

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# Preface

This preface provides an overview of this guide, describes guide conventions, and lists other publications that might be useful.



## WARNING!

*Service to all equipment should be performed by trained and qualified service personnel only. Before installing or removing any components of the system, or before carrying out any maintenance procedures, you must thoroughly read the safety information provided in [Appendix A](#) of this guide. Failure to follow this safety information can lead to personal injury or damage to the equipment.*

## Introduction

This guide provides the required information to install Extreme Networks® BlackDiamond® 8800 series switches. This guide also contains information about site preparation, switch functionality, and switch operation.

This guide is intended for use by network administrators responsible for installing and setting up network equipment. It assumes a basic working knowledge of:

- Local area networks (LANs)
- Ethernet concepts
- Ethernet switching and bridging concepts
- Routing concepts
- Simple Network Management Protocol (SNMP)

See the *ExtremeXOS 12.1 Concepts Guide* and the *ExtremeXOS 12.1 Command Reference Guide* for information about configuring Extreme Networks BlackDiamond 8800 series switches.






## NOTE

*If the information in the installation note or release note shipped with your Extreme Networks switch differs from the information in this guide, follow the installation or release note.*

## Conventions

[Table 1](#) and [Table 2](#) list conventions used in Extreme Networks customer documentation.

**Table 1: Notice Icons**

Icon	Notice Type	Alerts you to...
	Note	Important features or instructions.
	Caution	Risk of personal injury, system damage, or loss of data.
	Warning	Risk of severe personal injury.

**Table 2: Text Conventions**

Convention	Description
Screen displays	This typeface represents information as it appears on the screen, or command syntax.
The words “enter” and “type”	When you see the word “enter” in this guide, you must type something, and then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says “type.”
[Key] names	Key names appear in text in one of two ways: <ul style="list-style-type: none"> <li>Referenced by their labels, such as “the Return key” or “the Escape key”</li> <li>Written with brackets, such as [Return] or [Esc]</li> </ul> If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press [Ctrl]+[Alt]+[Del].
Words in italicized type	Italics emphasize a point of information or denote new terms at the place where they are defined in the text.

## Related Publications

The Extreme Networks ExtremeXOS™ switch documentation set includes:

- *ExtremeXOS 12.1 Concepts Guide*
- *ExtremeXOS 12.1 Command Reference Guide*
- *ExtremeXOS 12.1 Release Notes*
- *BlackDiamond 12800 Series Switches Hardware Installation Guide*
- *BlackDiamond 10808 Switch Hardware Installation Guide*
- *Summit Family Switches Hardware Installation Guide*
- *Extreme Networks Pluggable Interface Modules Installation Guide*

Documentation for Extreme Networks products is available from the Extreme Networks website at the following location:

<http://www.extremenetworks.com/services/documentation>

You can select and download the following Extreme Networks documentation from the Documentation Overview page:

- Software User Guides
- Hardware User Guides

You can find archived user guides for software at:

<http://www.extremenetworks.com/services/documentation/swuserguides.asp>

You can also find archived installation guides for hardware at:

<http://www.extremenetworks.com/services/documentation/hwuserguides.asp>



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## **About the BlackDiamond 8800 Series Switches**

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This chapter describes the Extreme Networks BlackDiamond 8800 series switches and includes the following sections:

- [Overview of the BlackDiamond 8800 Series Switches on page 15](#)
- [Full-Duplex Support on page 16](#)
- [Management Ports on page 16](#)
- [External Compact Flash Memory Card on page 16](#)
- [BlackDiamond 8806 Switch Chassis on page 16](#)
- [BlackDiamond 8810 Switch Chassis on page 18](#)

For information about the I/O modules and management modules (MSMs) for the BlackDiamond 8800 series switches, see [Chapter 2, “BlackDiamond 8800 Series Modules.”](#)

For information about installing the BlackDiamond switches, see [Chapter 5, “Installing the BlackDiamond 8800 Series Chassis.”](#)

## Overview of the BlackDiamond 8800 Series Switches

The BlackDiamond switches are chassis-based, Ethernet service core switches designed for core applications.

The features of these switches include:

- Hot-swappable I/O modules that include Gigabit Ethernet copper ports (10/100/1000) and Gigabit Ethernet fiber ports (SFP), or 10 Gigabit Ethernet ports (XFP)
- Management Switch Fabric Modules (MSMs) that provide the active switching fabric and CPU control subsystem
- Redundant, load-sharing, hot-swappable power supplies
- Field-replaceable, hot-swappable fan trays
- Auto-negotiation for half-duplex or full-duplex operation on 10/100/1000 Mbps ports
- Load sharing on multiple ports

The BlackDiamond 8800 series switches include two chassis models:

- BlackDiamond 8806 switch
- BlackDiamond 8810 switch

For more information about configuring a BlackDiamond switch, see the *ExtremeXOS 12.1 Concepts Guide* and the *ExtremeXOS 12.1 Command Reference Guide*.

## Full-Duplex Support

Extreme Networks switches provide full-duplex support for all ports. Full-duplex support means that frames can be transmitted and received simultaneously, effectively doubling the bandwidth available on a link. Most ports on an Extreme Networks switch will auto-negotiate duplex operation in the default configuration. Gigabit Ethernet fiber ports and 10-Gigabit Ethernet ports operate only in full-duplex mode in accordance with technical standards.

## Management Ports

Each BlackDiamond series Management Switch Fabric Module (MSM) has a 10/100BASE-TX Ethernet management port. This port allows you to communicate directly with the central processing unit (CPU) of the switch. You can plug an Ethernet cable directly from your laptop into the management port for direct access into the switch. This access allows you to view and locally manage the switch configurations.

## External Compact Flash Memory Card

All MSMs in the BlackDiamond family include a compact flash slot next to the console port. This slot accepts a compact flash memory card, which can be used to download a new version of ExtremeXOS and for other functions, including capturing debug information and core dump files. See the *ExtremeXOS 12.1 Concepts Guide* for more information regarding the use of the external compact flash memory card.

The external compact flash slot supports third-party compact flash cards.



### NOTE

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*You must use an industrial-grade compact flash card in the external compact flash slot of the MSM.*

## BlackDiamond 8806 Switch Chassis

The BlackDiamond 8806 chassis includes the following components:

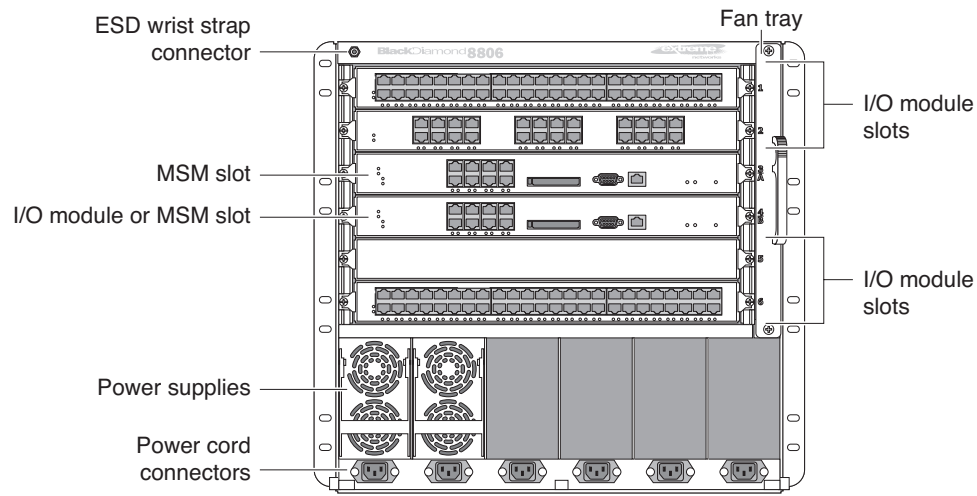
- One 6-slot chassis with backplane
- Four dedicated I/O module slots, labeled 1, 2, 5, and 6
- One dedicated MSM slot, labeled 3/A
- One dual-use slot for either an I/O module or MSM, labeled 4/B
- Power supply bay that accommodates up to six power supplies, accessed from the front of the unit
- One fan tray, accessed from the front right of the unit
- One connector for an ESD-preventive wrist strap

When two MSMs are installed, the chassis can support up to 48 gigabits of bandwidth per slot.



Figure 1 shows the front of a BlackDiamond 8806 chassis equipped with two MSMs and three optional I/O modules.

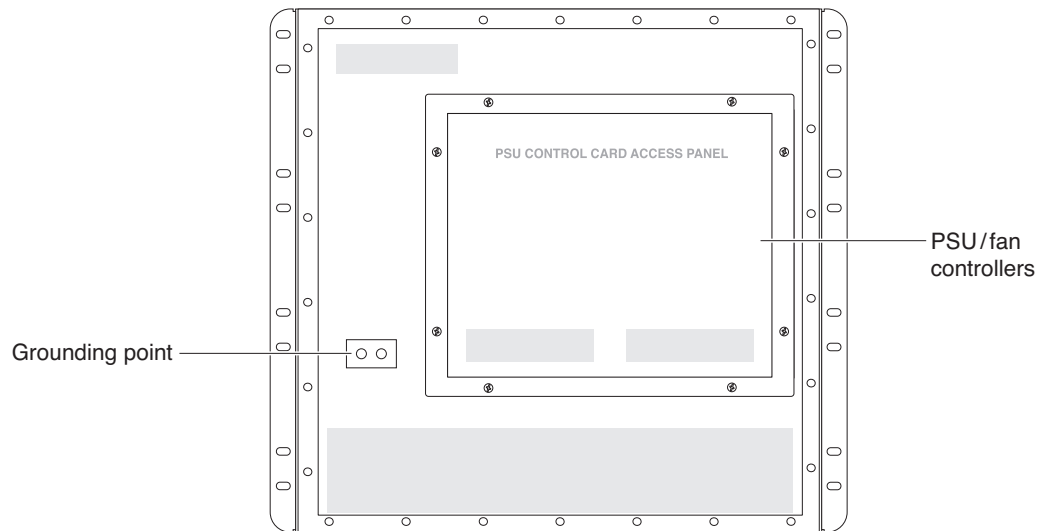
**Figure 1: Front of the BlackDiamond 8806 Chassis**



EX\_127

Figure 2 shows the rear panel of the BlackDiamond 8806 chassis.

**Figure 2: Rear Panel of the BlackDiamond 8806 Chassis**



EX\_128A

The rear panel of the BlackDiamond 8806 chassis provides:

- Chassis serial number
- Ethernet MAC address of the switch
- Symbols of safety certification
- Access to the PSU/fan controllers
- Attachment point for optional chassis ground

## BlackDiamond 8810 Switch Chassis

The BlackDiamond 8810 chassis consists of the following components:

- One 10-slot chassis with backplane
- Eight dedicated I/O module slots, labeled 1, 2, 3, 4, 7, 8, 9 and 10
- One dedicated MSM slot, labeled 5/A
- One dual-use slot for an I/O module or MSM, labeled 6/B
- Power supply bay that accommodates up to six power supplies, accessed from the front of the unit
- One fan tray, accessed from the front right of the unit
- One connector for an ESD-preventive wrist strap

When two MSMs are installed, the chassis can support up to 48 Gigabit bandwidth per slot.

Figure 1 shows the front of a BlackDiamond 8810 chassis equipped with two MSMs and three optional I/O modules.

**Figure 3: Front of the BlackDiamond 8810 Chassis**

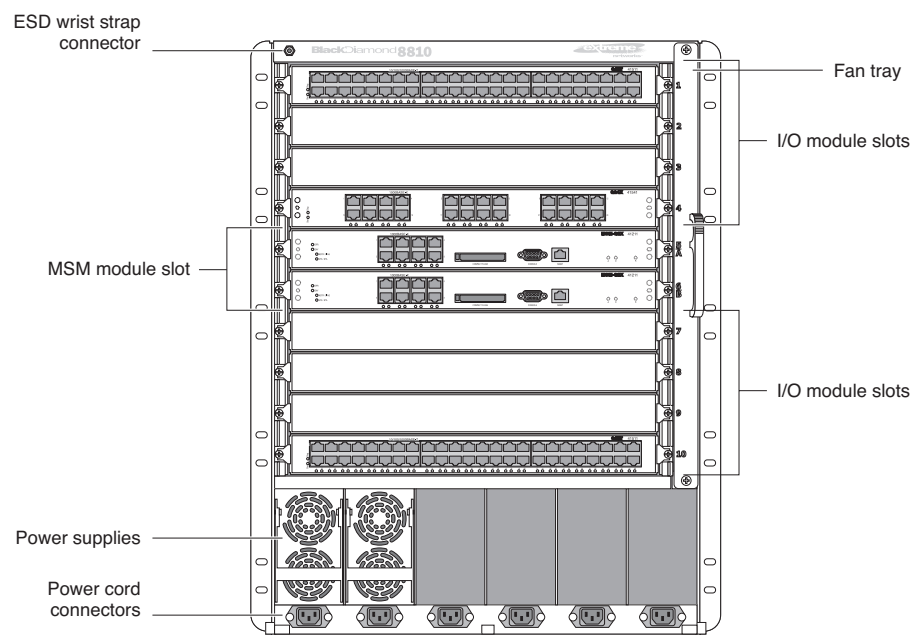
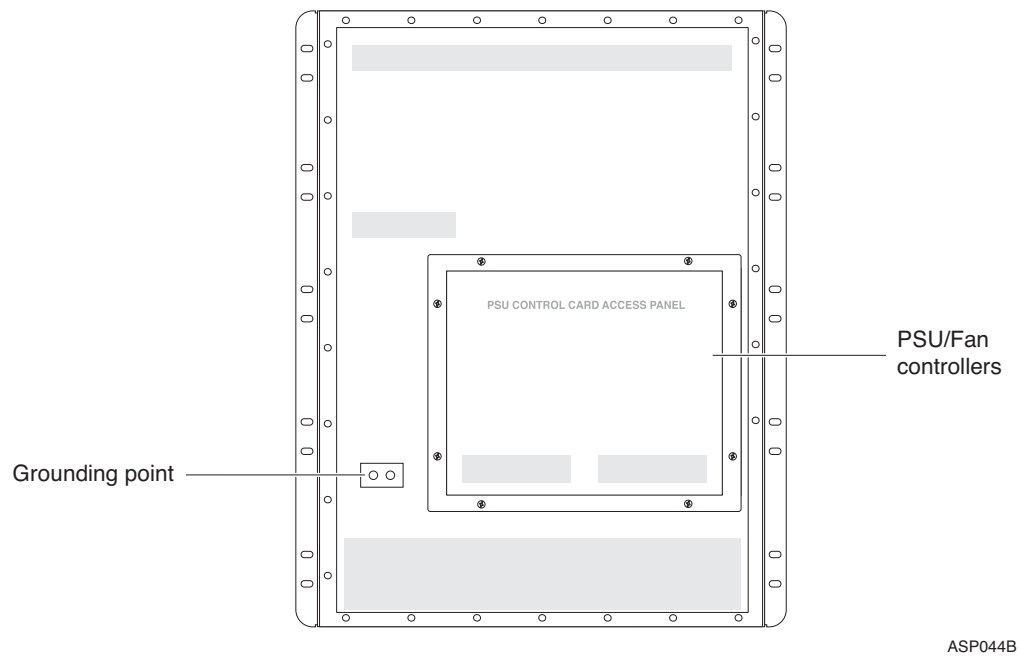


Figure 2 shows the rear panel of the BlackDiamond 8810 chassis.

**Figure 4: Rear Panel of the BlackDiamond 8810 Chassis**

The rear panel of the BlackDiamond 8810 chassis provides:

- Chassis serial number
- Ethernet MAC address of the switch
- Symbols of safety certification
- Access to the PSU/fan controllers
- Attachment point for optional chassis ground



This chapter describes modules for the BlackDiamond 8800 series of switches and includes the following sections:

- [Overview of the BlackDiamond 8800 Series Modules on page 21](#)
- [Management Switch Modules \(MSM\) on page 21](#)
- [I/O Modules on page 25](#)

## Overview of the BlackDiamond 8800 Series Modules

Modules available for the BlackDiamond 8800 series switches include management switch modules (MSMs) and I/O modules. A BlackDiamond module consists of a printed circuit board mounted on a metal panel that acts as the insertion vehicle in the BlackDiamond 8800 series switches. The module carrier also includes ejector/injector levers and captive retaining screws at each end of the module front panel. LEDs on the module front panel provide information about the operating status of the modules.



### CAUTION

*Do not attempt to mix modules across Extreme Networks product lines. BlackDiamond 8800 series modules are for use only in a BlackDiamond 8806 or 8810 switch. When a BlackDiamond 8800 series switch is in use, ExtremeXOS software will not recognize a module from a different product line.*

## Management Switch Modules (MSM)

The following MSMs are available for the BlackDiamond 8800 series switches:

- MSM-G8X
- MSM-48
- MSM-48c

The MSMs provide the active switching fabric and CPU control subsystem for the switch. One MSM is required for switch operation; however, adding a second MSM to the chassis increases reliability and throughput. Each MSM provides 192 Gbps of switching throughput through three ASICs.

A compact flash slot allows you to insert an external compact flash memory card. (See [Chapter 1](#) for more information about Extreme Networks-supported compact flash cards.)

## Redundant MSM Activity

The BlackDiamond 8800 series switches can run with a single MSM installed. When you install an additional MSM, one of the MSMs operates as the primary MSM and the other becomes the backup (secondary) MSM. The primary MSM is responsible for upper-layer protocol processing and system management functions. Packet handling is distributed among the CPUs of all installed MSMs.

When you save the switch configuration, it is saved to all MSMs.

Selection of the primary MSM occurs automatically. The following examples describe the selection process:

- When a switch boots with two MSMs installed, the MSM in the lower-numbered slot becomes the primary MSM. In the BlackDiamond 8810 switch this is slot 5; in the BlackDiamond 8806 switch, this is slot 3.
- When a switch boots with a single MSM (regardless of the slot position), it is selected as the primary MSM.

If a second MSM is added to the switch after it has been powered up, the added MSM becomes the backup MSM. MSMs that operate as backup MSMs can be inserted and removed without disrupting network services.

- If you remove the primary MSM while the switch is operating, the backup MSM performs a soft reset and then becomes the primary MSM.

For example, in a BlackDiamond 8810 switch with a primary MSM in slot 5 and a backup MSM in slot 6, if you remove the primary MSM from slot 5, the backup MSM in slot 6 becomes the primary MSM.

## MSM Physical Features

Figure 5 shows the MSM-G8X.

**Figure 5: MSM-G8X**

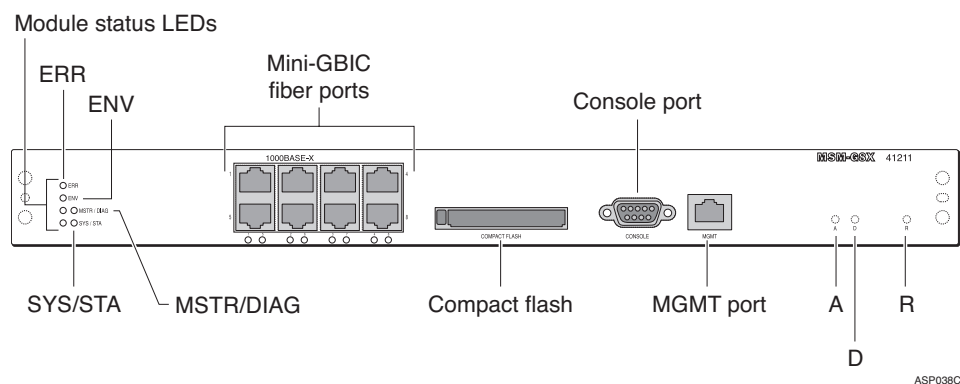


Figure 6 shows the MSM-48.

**Figure 6: MSM-48**

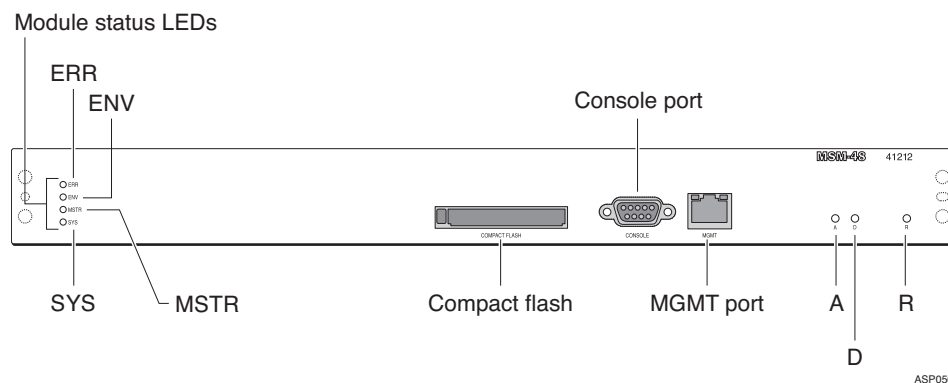
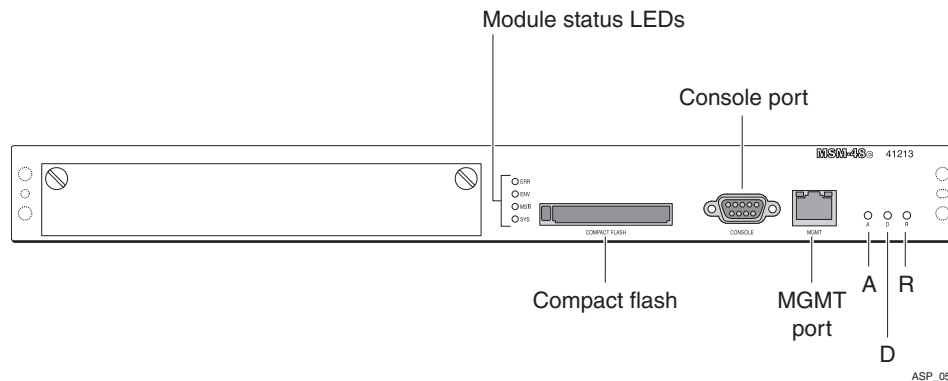


Figure 7 shows the MSM-48c.

**Figure 7: MSM-48c**



The BlackDiamond 8800 series MSMs have the following features on the front panel:

- Console port—DB-9 serial port used to connect a terminal and perform local management.
- Management port—A 10/100 Mbps Ethernet management port used to connect an Ethernet cable directly from your laptop to the switch to view and locally manage the switch configurations. This port can also be used to connect the system into a parallel management network for administration.
- A button—Allows you to select the alternate BootROM image when you power on the module. To use the alternate BootROM image, you must hold the A button while pressing the R button simultaneously.
- D button—Allows you to force a system dump that dumps the debug information into NVRAM. This information is available on the next reboot. No core file is created.
- R button—Allows you to reset the MSM-G8X without removing the module from the chassis.
- Compact flash slot

The MSM-G8X has the following additional ports:

- Eight SFP data ports—These data ports operate the same as the ports on the G24X I/O module. (See [“G24X I/O Module” on page 26](#) for more information about these ports.) The eight data ports are integrated into the MSM and managed by a separate I/O processor, which retains control of the eight Ethernet ports on the MSM during a failover. The backup MSM can take control of the ports.

The MSM-48c has a slot for one of the following option cards:

- S-G8Xc—Adds eight 1-gigabit SFP data ports to the MSM-48c. These data ports operate the same as the ports on the G24Xc I/O module. (See [“G24Xc I/O Module” on page 34](#) for more information about these ports.)
- S-10G1Xc—Adds one 10-gigabit XFP data port to the MSM-48c. This data port operates the same as the ports on the 10G4Xc I/O module. (See [“10G4Xc I/O Module” on page 33](#) for more information about this port.)

The MSM-48c has more CPU memory than the other two MSM models. For details of feature support in the MSM-48c, see the *ExtremeXOS 12.1 Concepts Guide*.

### NOTE

See the *ExtremeXOS 12.1 Concepts Guide* and the *ExtremeXOS 12.1 Command Reference Guide* for more information about numbering conventions for modules and ports, as well as configuration and display information.

## MSM LEDs

Table 3 describes the LED activity on the BlackDiamond 8800 series MSMs.

**Table 3: MSM-G8X, MSM-48. and MSM-48c LEDs**

LED	Color	Indicates
SYS	Green blinking	Normal operation is occurring.
	Off	Switch is not receiving power or MSM is running diagnostics.
STA (MSM-G8X only)	Amber blinking	Diagnostic tests are running on the module. The LED resets if the diagnostics are terminated.
	Amber	Diagnostic failure has occurred.
	Off	Normal operation for diagnostics.
MSTR	Green	Module is operating as primary MSM.
	Amber	Module is operating as backup (secondary) MSM.
	Off	Normal operation for diagnostics.
DIAG (MSM-G8X only)	Green blinking	Power-on self-test (POST) is running.
	Off	Normal operation for diagnostics.
ERR	Amber	A critical software error has been logged since power-up.
	Off	Normal operation is occurring.
ENV	Green	Environment (temperature, fan, power supply) is operating properly.
	Amber	Environmental failure has occurred.
Link on MSTR Ethernet port	Green	Link is up.
	Off	Link is down.
Activity on MSTR	Amber	Packet activity is occurring.



### NOTE

The LEDs on the management Ethernet port are not labeled. On most modules, the LED on the right is the link LED, and the one on the left is the activity LED. On the MSM-48c, the left LED indicates link status, and the right LED indicates link activity by blinking green.



### NOTE

The data port LEDs on the MSM-G8X operate the same as the port status LEDs on the G24X I/O module.

## I/O Modules

The following series of I/O modules are available for the BlackDiamond 8800 series switches:

- BlackDiamond 8800 original series I/O modules (see [page 25](#))
- BlackDiamond 8800 a-series I/O modules (see [page 28](#))
- BlackDiamond 8800 c-series I/O modules (see [page 32](#))
- BlackDiamond 8800 e-series I/O modules (see [page 36](#))



No configuration information is stored on the I/O modules; all configuration information is stored on the MSMs.

When a BlackDiamond 8800 series switch is powered on, the software generates a default configuration for any slots that contain I/O modules. The default configuration allows the I/O module ports to participate in the VLAN named *default*. The default configuration for the I/O module is not preserved unless you explicitly save the configuration to NVRAM.

You can configure parameters of an I/O module after it is installed, or preconfigure a slot for a certain type of module and configuration. The preconfigured information is applied to the module after it is inserted. If you preconfigure a slot for a specific module type and then insert a different type of module, the inserted module reverts to its default configuration.

**NOTE**

See the ExtremeXOS 12.1 Concepts Guide and the ExtremeXOS 12.1 Command Reference Guide for feature-specific information related to BlackDiamond 8800 series modules.

**CAUTION**

When BlackDiamond 8800 I/O modules from different series (original series, a-series, c-series, and e-series) are installed in the same BlackDiamond 8800 series chassis, limitations on feature sets may occur. See the ExtremeXOS 12.0 Concepts Guide and the ExtremeXOS 12.0 Command Reference Guide for more information about these limitations.

## BlackDiamond 8800 Original Series I/O Modules

The BlackDiamond 8800 original series of I/O modules consists of the following:

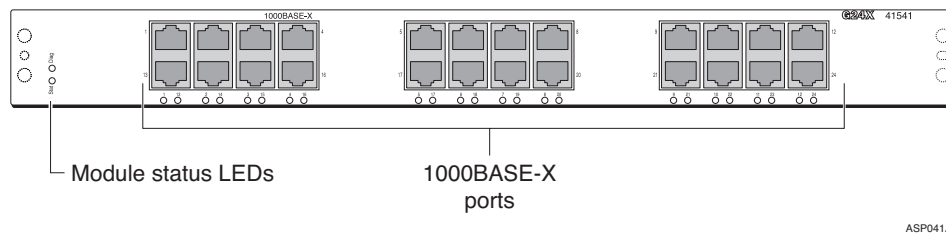
- [G24X I/O Module on page 26](#)
- [10G4X I/O Module on page 26](#)
- [G48T I/O Module on page 27](#)
- [G48P I/O Module on page 28](#)

**NOTE**

The ports on the MSM-G8X also have the same operational features as the ports on the G24X I/O module and can be included as part of the BlackDiamond 8800 original series I/O modules.

### G24X I/O Module

The G24X I/O module ([Figure 8](#)) has 24 unpopulated SFP-based Gigabit Ethernet ports.

**Figure 8: G24X I/O Module**

The default configuration of the G24X module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)

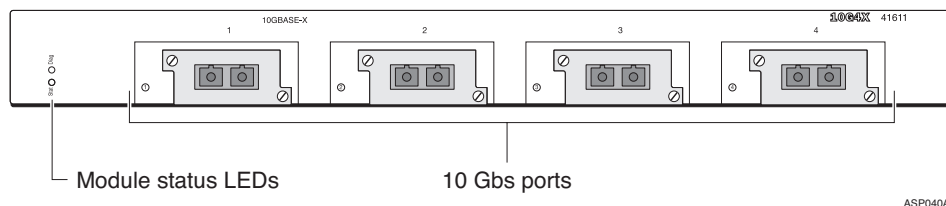
The G24X module has the following LEDs:

- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the G24X module, see [“I/O Module LEDs” on page 38](#). For information about the SFP modules, see the *Extreme Networks Pluggable Interface Modules Installation Guide*.

## 10G4X I/O Module

The 10G4X I/O module ([Figure 9](#)) has four unpopulated XENPAK-based 10 Gigabit Ethernet ports.

**Figure 9: 10G4X I/O Module**

The default configuration of the 10G4X I/O module is as follows. All ports:

- Are added to the default VLAN as untagged.
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)

The 10G4X I/O module has the following LEDs:

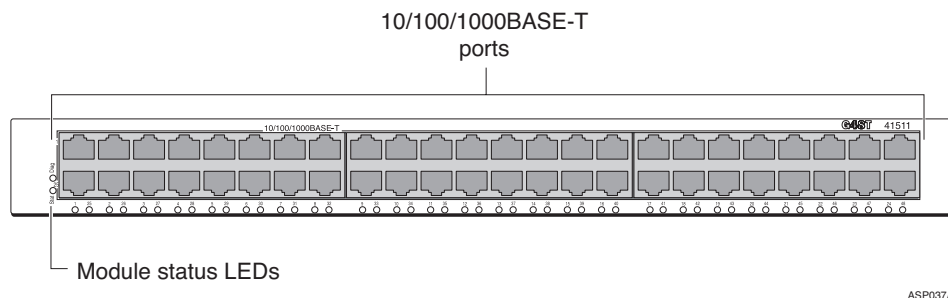
- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the 10G4X I/O module, see [“I/O Module LEDs” on page 38](#). For information about the XENPAK interfaces, see the *Extreme Networks Pluggable Interface Modules Installation Guide*.

## G48T I/O Module

The G48T I/O module ([Figure 10](#)) has 48 autosensing 10/100/1000BASE-T ports that use standard RJ-45 connectors.

**Figure 10: G48T I/O Module**



The default configuration of the G48T I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)
- Operate in autonegotiation mode

The G48T I/O module has the following LEDs:

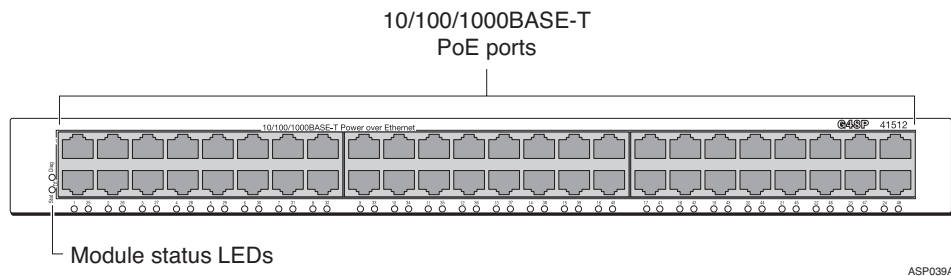
- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the G48T I/O module, see [“I/O Module LEDs” on page 38](#).

## G48P I/O Module

The G48P I/O module ([Figure 11](#)) has 48 autosensing 10/100/1000BASE-T ports that use standard RJ-45 connectors. In addition to the Ethernet connection, these ports can deliver Power over Ethernet (PoE) to an attached device using the same cable. The G48P I/O module supports the IEEE 802.3af PoE specification.

**Figure 11: G48P I/O Module**



When powered devices (PDs) are connected to a port, the PDs are discovered and classified as 802.3af-compliant or as legacy devices. ExtremeXOS implements the following functions:

- Enables the port for discovery, classification, and power delivery
- Enforces port power limits by denying power to a device exceeding the configured limit
- Enforces class limits by denying power to a device exceeding the class limit
- Reports and tracks port power faults

The default configuration of the G48P I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)
- Operate in autonegotiation mode

The G48P I/O module has the following LEDs:

- Module status
- Module diagnostics
- Port status
- Power status

For information about the LEDs and their activity on the G48P I/O module, see [“I/O Module LEDs” on page 38](#).

## BlackDiamond 8800 a-Series I/O Modules

The BlackDiamond 8800 a-series I/O modules include:

- [G48Ta I/O Module on page 29](#)
- [G48Xa I/O Module on page 30](#)
- [10G4Xa I/O Module on page 31](#)
- [10G4Ca I/O Module on page 31](#)

**CAUTION**

BlackDiamond a-series modules require specific minimum versions of ExtremeXOS software to be recognized by the MSM (see [Table 4](#)). Software builds earlier than the listed versions do not support the specified I/O modules.

If you attempt to install one of these I/O modules before upgrading the software on your MSM, the module will not be recognized by the software and it will not power up. The following error messages are similar to the messages that may be displayed on the console or in the log. (Samples represent an unrecognized module in slot 2.)

- On the console: ERROR: Unknown cardtype in slot 2 - please program the eeprom
- In the log: <Error: HAL.Card.Error> MSM-A: Unable to read cardtype for slot 2

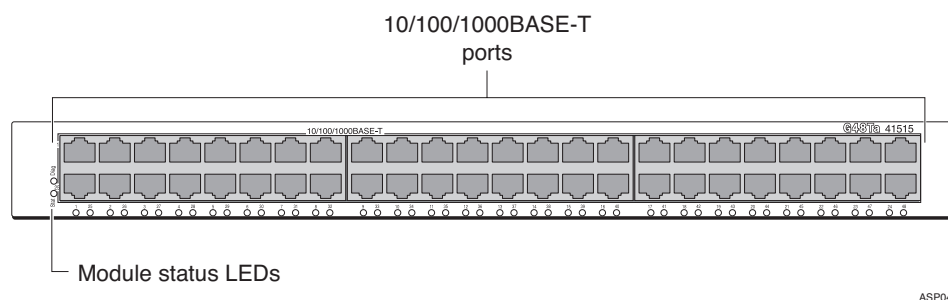
**Table 4: Minimum Software Versions for BlackDiamond 8800 a-Series Modules**

Module	Required ExtremeXOS version
G48Ta	ExtremeXOS 11.5.0 or later
G48Xa	ExtremeXOS 11.5.0 or later
10G4Xa	ExtremeXOS 11.6.0 or later
10G4Ca	ExtremeXOS 12.0.1 or later

## G48Ta I/O Module

The G48Ta I/O module ([Figure 12](#)) has 48 autosensing 10/100/1000BASE-T ports that use standard RJ-45 connectors.

**Figure 12: G48Ta I/O Module**



The default configuration of the G48Ta I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)
- Operate in autonegotiation mode

The G48Ta I/O module has the following LEDs:

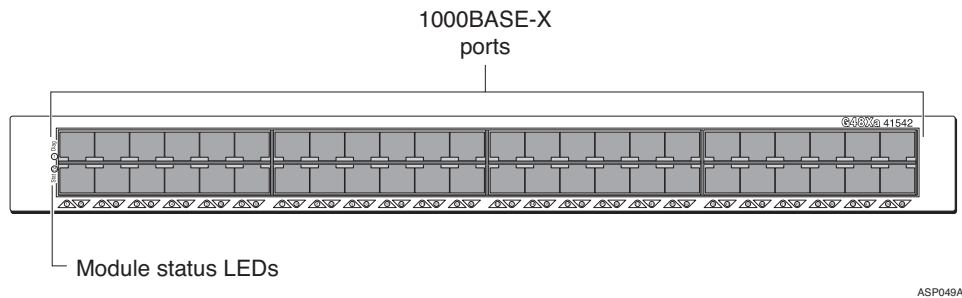
- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the G48Ta I/O module, see [“I/O Module LEDs” on page 38](#).

## G48Xa I/O Module

The G48Xa I/O module (Figure 13) has 48 1000BASE-X ports that use SPF fiber SFP connectors.

**Figure 13: G48Xa I/O Module**



The default configuration of the G48Xa module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)

The G48Xa module has the following LEDs:

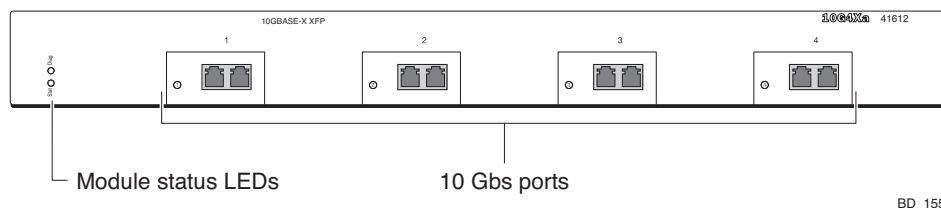
- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the G48Xa module, see [“I/O Module LEDs” on page 38](#). For information about SFPs, see the *Extreme Networks Pluggable Interface Modules Installation Guide*.

## 10G4Xa I/O Module

The 10G4Xa I/O module ([Figure 14](#)) has four XFP-based 10-gigabit Ethernet ports.

**Figure 14: 10G4Xa I/O Module**



The default configuration of the 10G4Xa I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)

The 10G4Xa I/O module has the following LEDs:

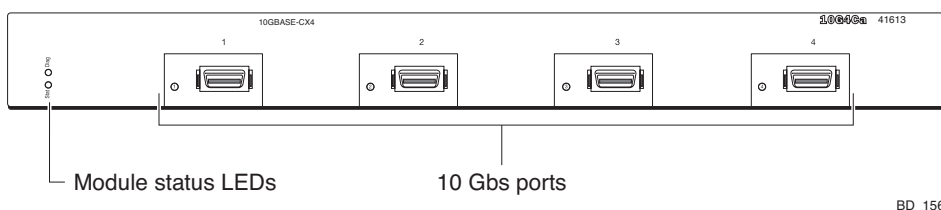
- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the 10G4Xa I/O module, see [“I/O Module LEDs” on page 38](#). For information about the XFP interfaces, see the *Extreme Networks Pluggable Interface Modules Installation Guide*.

## 10G4Ca I/O Module

The 10G4Ca I/O module ([Figure 15](#)) has four 10-gigabit Ethernet ports that use CX4 interface connectors.

**Figure 15: 10G4Ca I/O Module**



The default configuration of the 10G4Ca I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)

The 10G4Ca I/O module has the following LEDs:

- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the 10G4Ca I/O module, see [“I/O Module LEDs” on page 38](#).

## BlackDiamond 8800 c-Series I/O Modules

The BlackDiamond 8800 c-series of I/O modules consists of the following:

- [G48Tc I/O Module on page 32](#)
- [10G4Xc I/O Module on page 33](#)
- [10G8Xc I/O Module on page 34](#)
- [G24Xc I/O Module on page 34](#)
- [G48Xc I/O Module on page 35](#)



### CAUTION

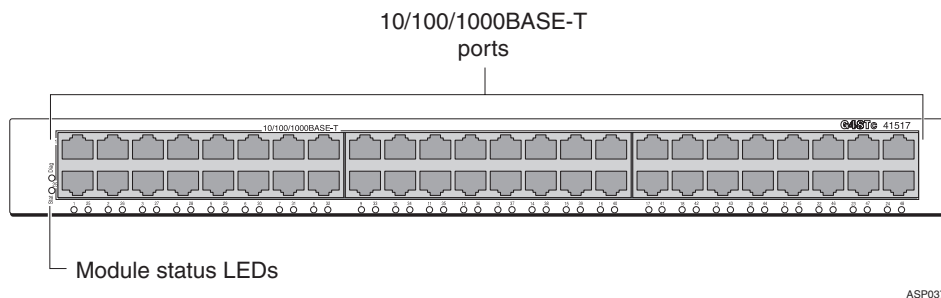
*ExtremeXOS builds earlier than version 12.1 do not support the BlackDiamond 8800 c-series modules. If you attempt to install one of these I/O modules before upgrading the software on your MSM the module will not be recognized by the software and it will not power up. The following error messages are similar to the messages that may be displayed on the console or in the log. (Samples represent an unrecognized module in slot 2.)*

- *Console:* ERROR: Unknown cardtype in slot 2 - please program the eeprom
- *Log:* <Error: HAL.Card.Error> MSM-A: Unable to read cardtype for slot 2

### G48Tc I/O Module

The G48Tc I/O module ([Figure 16](#)) has 48 autosensing 10/100/1000BASE-T ports that use standard RJ-45 connectors.

**Figure 16: G48Tc I/O Module**



You can add an optional S-POE daughter card to the G48Tc I/O module to provide Power over Ethernet functions in this module. With an installed S-POE card, the ports can deliver Power over Ethernet (PoE) to an attached device, as well as the usual Ethernet connection, using a single cable. The G48Tc I/O module supports the IEEE 802.3af PoE specification.

The default configuration of the G48Tc I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)
- Operate in autonegotiation mode



The G48Tc I/O module has the following LEDs:

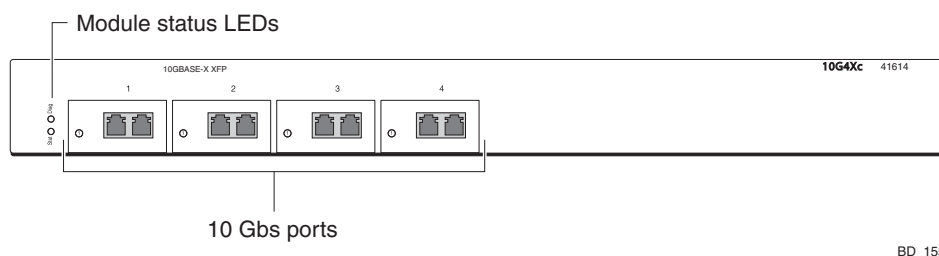
- Module status
- Module diagnostics
- Port status
- POE present

For information about the LEDs and their activity on the G48Tc I/O module, see [“I/O Module LEDs” on page 38](#).

## 10G4Xc I/O Module

The 10G4Xc I/O module ([Figure 17](#)) has four unpopulated XFP-based 10-gigabit Ethernet ports.

**Figure 17: 10G4Xc I/O Module**



The default configuration of the 10G4Xc I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)

The 10G4Xc I/O module has the following LEDs:

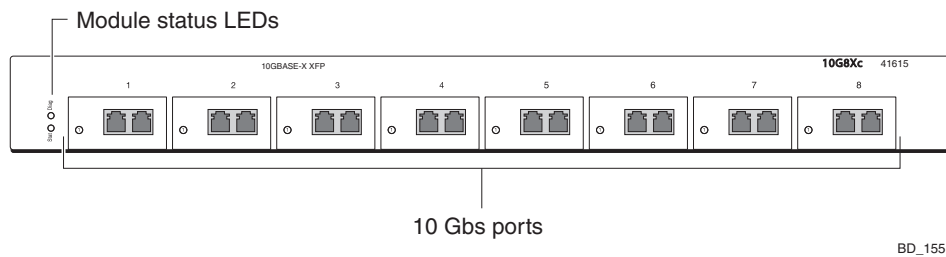
- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the 10G4Xc I/O module, see [“I/O Module LEDs” on page 38](#).

## 10G8Xc I/O Module

The 10G8Xc I/O module [Figure 18](#) has eight unpopulated XFP-based 10-gigabit Ethernet ports. This module is over-subscribed 2:1.

**Figure 18: 10G8Xc I/O Module**



The default configuration of the 10G8Xc I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)

The 10G8Xc I/O module has the following LEDs:

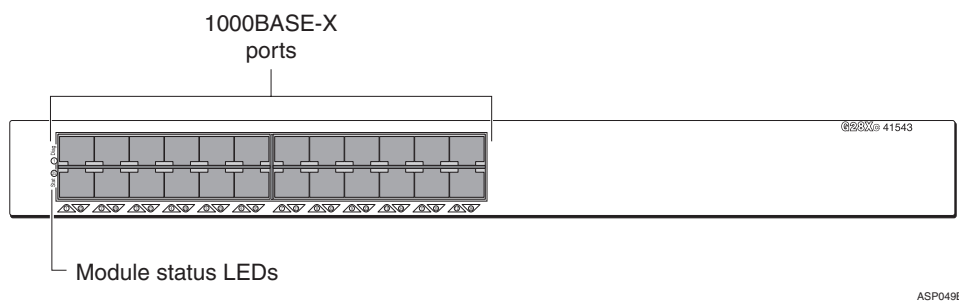
- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the 10G8Xc I/O module, see [“I/O Module LEDs” on page 38](#).

## G24Xc I/O Module

The G24Xc I/O module [Figure 19](#) has 24 unpopulated SFP-based 1-gigabit Ethernet ports.

**Figure 19: G24Xc I/O Module**



The default configuration of the G24Xc I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)

The G24Xc I/O module has the following LEDs:

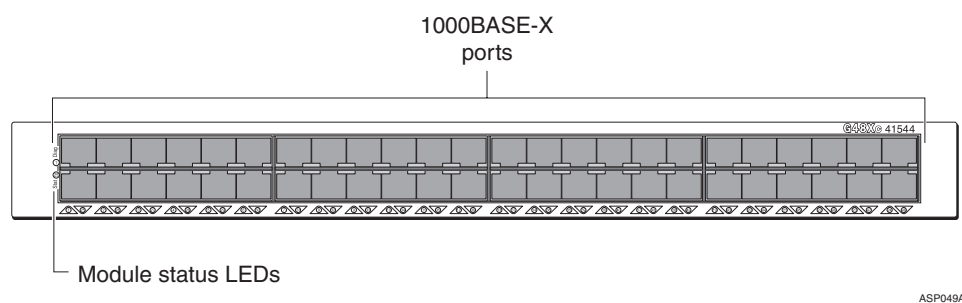
- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the G24Xc I/O module, see [“I/O Module LEDs” on page 38](#).

## G48Xc I/O Module

The G48Xc I/O module ([Figure 20](#)) has 48 unpopulated SFP-based 1-gigabit Ethernet ports.

**Figure 20: G48Xc I/O Module**



The default configuration of the G48Xc I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)

The G48Xc I/O module has the following LEDs:

- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the G48Xc I/O module, see [“I/O Module LEDs” on page 38](#).

## BlackDiamond 8800 E-Series I/O Modules

The BlackDiamond 8800 e-series of I/O modules include:

- [G48Te I/O Module on page 36](#)
- [G48Pe I/O Module on page 37](#)
- [G48Te2 I/O Module on page 38](#)



### CAUTION

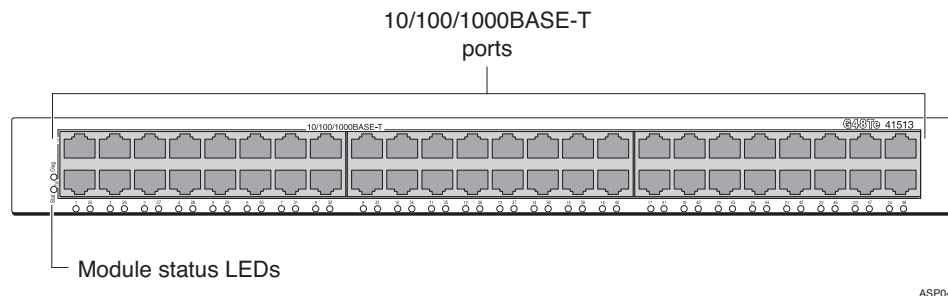
*ExtremeXOS software builds earlier than version 11.5.0 do not support G48Te or G48Pe I/O modules. ExtremeXOS builds earlier than version 12.1 do not support the G48Te2 I/O module. If you attempt to install one of these I/O modules before upgrading the software on your MSM to the required minimum version, the module will not be recognized by the software and it will not power up. The following error messages are similar to the messages that may be displayed on the console or in the log. (Samples represent an unrecognized module in slot 2.)*

- Console: ERROR: Unknown cardtype in slot 2 - please program the eeprom
- Log: <Error: HAL.Card.Error> MSM-A: Unable to read cardtype for slot 2

### G48Te I/O Module

The G48Te I/O module ([Figure 21](#)) has 48 autosensing 10/100/1000BASE-T ports that use standard RJ-45 connectors. When an 8800 series switch is running in dual-MSM mode, this module will be oversubscribed 2:1. When the switch is running a single MSM, this module will be oversubscribed 4:1.

**Figure 21: G48Te I/O Module**



The default configuration of the G48Te I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)
- Operate in autonegotiation mode

The G48Te I/O module has the following LEDs:

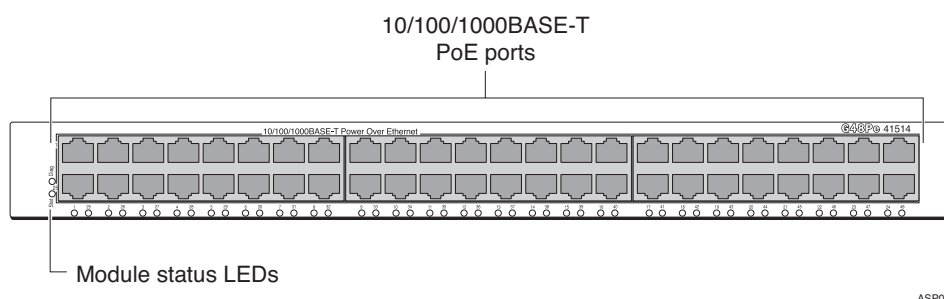
- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the G48Te I/O module, see [“I/O Module LEDs” on page 38](#).

## G48Pe I/O Module

The G48Pe I/O module (Figure 22) has 48 autosensing 10/100/1000BASE-T ports that use standard RJ-45 connectors. In addition to the Ethernet connection, these ports can deliver Power over Ethernet (PoE) to an attached device, using the same cable. The G48Pe I/O module supports the IEEE 802.3af PoE specification. When an 8800 series switch is running in dual-MSM mode, this module will be oversubscribed 2:1. When the switch is running a single MSM, this module will be oversubscribed 4:1.

**Figure 22: G48Pe I/O Module**



When powered devices (PDs) are connected to a port, the PDs are discovered and classified as 802.3af-compliant or as legacy devices. ExtremeXOS implements the following functions:

- Enables the port for discovery, classification, and power delivery
- Enforces port power limits by denying power to a device exceeding the configured limit
- Enforces class limits by denying power to a device exceeding the class limit
- Reports and tracks port power faults

The default configuration of the G48Pe I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)
- Operate in autonegotiation mode

The G48Pe I/O module has the following LEDs:

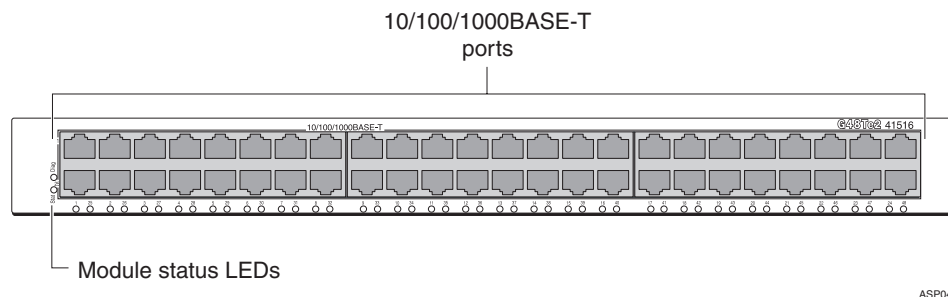
- Module status
- Module diagnostics
- Port/Power status

For information about the LEDs and their activity on the G48Pe I/O module, see [“I/O Module LEDs” on page 38](#).

## G48Te2 I/O Module

The G48Te2 I/O module ([Figure 21](#)) has 48 autosensing 10/100/1000BASE-T ports that use standard RJ-45 connectors.

**Figure 23: G48Te2 I/O Module**



You can add an optional S-POE daughter card to the G48Te2 I/O module to provide Power over Ethernet functions in this module. With an installed S-POE card, the ports can deliver Power over Ethernet (PoE) to an attached device as well as the usual Ethernet connection, using a single cable. The G48Te2 I/O module supports the IEEE 802.3af PoE specification.

The default configuration of the G48Te2 I/O module is as follows. All ports:

- Are added to the default VLAN as untagged
- Inherit the properties of the default VLAN (for example, protocol type and VLANid)
- Operate in autonegotiation mode

The G48Te2 I/O module has the following LEDs:

- Module status
- Module diagnostics
- Port status

For information about the LEDs and their activity on the G48Te2 I/O module, see [“I/O Module LEDs” on page 38](#).

## I/O Module LEDs

This section describes the LEDs for the module, for the port, and for inline power delivery status for I/O modules in the BlackDiamond 8800 series of switches.



### NOTE

*Inline power delivery applies only to the ports on the G48P and G48Pe I/O modules or to a G48tc or G48Te2 I/O module with an installed S-POE card.*

## Module LEDs

[Table 5](#) describes the LED activity for all BlackDiamond 8800 series I/O modules.

**Table 5: BlackDiamond 8800 Series I/O Module LEDs**

LED	Color	Indicates
Status	Green blinking	Normal operation
	Amber blinking	Configuration error, code version error, diagnostic failure, or other severe module error
DIAG	Off	No power
	Off	Normal operation
	Amber blinking	Diagnostics in progress
	Amber	Diagnostic failure

## Port LEDs on Non-PoE Modules

This section describes the port LEDs for non-PoE BlackDiamond 8800 series I/O modules and for port option cards installed in the MSM-8c. These include the following modules and option cards:

- G24X
- G48T
- 10G4X
- G48Ta
- G48Xa
- 10G4Xa
- 10G4Ca
- G48Tc (without S-POE card)
- G24Xc
- G48Xc
- 10G4Xc
- 10G8Xc
- G48Te
- G48Te2 (without S-POE card)
- S-10G1Xc option card
- S-G8Xc option card

[Table 6](#) describes the LED meanings for each port on the non-PoE BlackDiamond 8800 series I/O modules and the port option cards for the MSM-8c.

**Table 6: Port LEDs for the BlackDiamond 8800 Series Non-PoE I/O Modules and Port Option Cards**

LED	Color	Indicates
Port	Solid green	Link up
	Slow green blinking	Port disabled
	Amber blinking	Activity
	Off	Link down



### NOTE

[Table 6](#) describes port LED activity for the G48Tc and G48Te2 modules without an installed S-POE card. When these modules have an S-POE card installed, the port LEDs operate as described in [Table 7](#).

## Port LEDs on PoE Modules (G48P, G48Pe, and G48Tc or G48Te2 with S-POE Card)

This section describes the port LEDs for BlackDiamond 8800 series I/O modules that support PoE. These include the following modules:

- G48P
- G48Pe
- G48Tc I/O module with an installed S-POE card
- G48Te2 I/O module with an installed S-POE card

Port LEDs on these modules indicate the status of the inline power delivered through the ports.

[Table 7](#) describes the LED meanings for each port on the PoE-capable I/O modules.

**Table 7: Port LEDs for the PoE-capable I/O Modules**

LED	Color	Indicates
Port with power enabled	Solid amber	Link up
	Amber blinking	Activity
	Slow amber blinking	Port disabled or Link down
Port with power disabled	Blinking amber/green	Power fault or insufficient power
	Solid green	Link up
	Slow green blinking	Port disabled
	Green blinking	Activity
	Off	Link down
	Blinking amber/green	Power fault or insufficient power



### 3 Power Supply Units for BlackDiamond 8800 Series Switches

This chapter includes the following sections:

- [Overview of BlackDiamond 8800 Series Power Supplies on page 41](#)
- [Extreme Networks 700/1200 W AC PSU on page 42](#)
- [Extreme Networks 600/900 W AC PSU on page 45](#)
- [Combining Different AC PSU Models on page 47](#)
- [Extreme Networks 1200 W DC PSU on page 48](#)

The chapter describes the power supply units used with the BlackDiamond 8800 series switches.

## Overview of BlackDiamond 8800 Series Power Supplies

The BlackDiamond 8800 series switches can be powered by either AC or DC power supplies (PSUs). AC power supplies in the BlackDiamond 8800 series switches are fully fault tolerant and load-sharing in an N+1 configuration. For a switch using DC power supplies in an N+N configuration, each group of power supplies can provide A/B feed redundancy for the system. After the system is properly configured, if one PSU fails, the others will provide sufficient power to operate a fully loaded switch.

The BlackDiamond power supply units are intended for use in specific BlackDiamond switches only. [Table 8](#) lists the BlackDiamond 8800 series switches and their compatible power supply units.

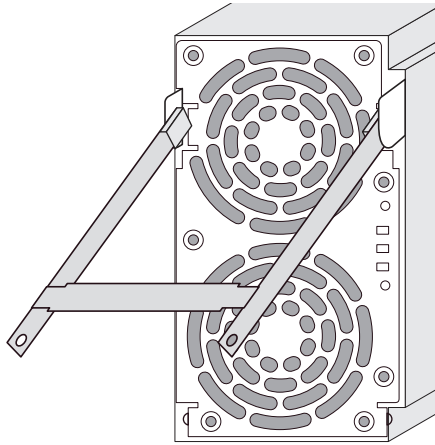
**Table 8: PSU Compatibility in BlackDiamond 8800 Series Switches**

BlackDiamond Switch	Compatible PSU	Compatibility Notes
BlackDiamond 8806	600W/ 900W AC PSU <b>AND/OR</b> 700W/ 1200W AC PSU <b>OR</b> 1200W DC PSU	The 700/1200 W AC PSU can be used in combination with a 600/900 W AC PSU in the same BlackDiamond 8806 system only.  Extreme Networks <b>does not</b> recommend using the 600/900 W AC PSU or the 700/1200 W AC PSU in combination with a 1200W DC PSU.
BlackDiamond 8810	700W/ 1200W AC PSU <b>OR</b> 1200W DC PSU	Extreme Networks <b>does not</b> recommend using the 700/1200 W AC PSU in combination with a 1200W DC PSU.

## Extreme Networks 700/1200 W AC PSU

Figure 24 shows the Extreme Networks 700/1200 W AC UL-listed accessory power supply unit (Model # 60020/PS 2336). The power supply bay in a BlackDiamond 8800 series switch can accommodate up to six hot-swappable Extreme Networks 700/1200 W AC PSUs.

**Figure 24: Extreme Networks 700/1200 W AC PSU**



EX\_015

The front panel on each Extreme Networks 700/1200 W AC PSU contains two cooling fans and a handle for insertion and removal of the unit. Airflow enters the front vents on the PSU and exits through the rear vents of the switch. Airflow through the Extreme Networks 700/1200 W AC PSU is independent from the airflow through the rest of the switch.

The AC input connection is located on the switch directly below each installed power supply.



### NOTE

*In a BlackDiamond 8806 system, the Extreme Networks 700W/1200 W AC PSU can be used with an Extreme Networks 600/900 W AC PSU in the same chassis.*

*Extreme Networks does not recommended using the 700/1200 W AC PSU with an Extreme Networks 1200W DC PSU in the same BlackDiamond 8800 series switch.*






### WARNING!

*Field operators must not attempt to open the 700/1200 W AC PSU enclosure for any reason; the PSU does not contain user-serviceable parts. In the event of failure, return the defective 700/1200 W AC PSU to Extreme Networks for repair or replacement.*

## LEDs

The front panel of the Extreme Networks 700/1200 W AC PSU provides status LEDs. [Table 9](#) describes the LED activity.

**Table 9: LEDs on the 700/1200 W AC PSU**

PSU Condition	 Power Green	 Predictive Fail Amber	 Fail Amber
Power supply AC outputs working normally	On	Off	Off
AC input power present/standby output on	Blinking	Off	Off
Current limit on 48 VDC output	On	Off	Blinking
Predictive failure	On	Blinking	Off
No input power to this PSU only	Off	Off	On
No input power to any PSU	Off	Off	Off
Power supply failure	Off	Off	On

## Power Supply Cords

Extreme Networks 700/1200 W AC PSUs are shipped with both 110 V AC and 220 V AC power supply cords. The 110 V AC power supply cord allows a maximum DC output power of 700 W. The 220V AC power supply cord allows a maximum DC output power of 1200 W.

All power supply cords provided by Extreme Networks are designed for use only in the United States, Canada, and Mexico. Power supply cords for use outside of North America are typically provided by a third-party distribution center and must meet the following requirements:

- The power supply cord must be agency-certified for the country of use.
- The power supply cord must have an IEC 320 C13 plug to connect to the IEC320 C14 connector on the power supply.
- The power supply cord must have an appropriately rated and approved wall plug applicable to the country of installation.
- The power supply cord must be less than 5 meters long.
- The wire size must be a minimum of 16 AWG (1.0 mm<sup>2</sup>) copper-stranded.



### **WARNING!**

*Be sure that the source outlet is properly grounded before plugging the AC power cord into the Extreme Networks AC PSU.*

## Fuse

The Extreme Networks 700/1200 W AC PSU line and neutral legs are both fused. Power to the switch may still be live if the neutral fuse is open. This is not a field operator replaceable fuse. In the event of failure, immediately return the Extreme Networks 700/1200 W AC PSU for a complete replacement.



### **WARNING!**

*Field operators must not attempt to configure or replace fuses in Extreme Networks 700/1200 W AC PSUs! In the event of failure, immediately return the defective Extreme Networks 700/1200 W AC PSU for a complete replacement.*

## Specifications

The 700/1200 W AC PSU functions from 90 V to 264 V and 47 Hz to 63 Hz AC Input. Each PSU provides 700 W to the system if the AC input is in the 110 V low-line output power range and 1200 W to the system if the AC input is in the 220 V high-line output power range.

A greater number of PSUs are needed to support the load if the low-line power range is used to power the switch. The software determines the maximum available power required for the switch and enables the modules accordingly.



### CAUTION

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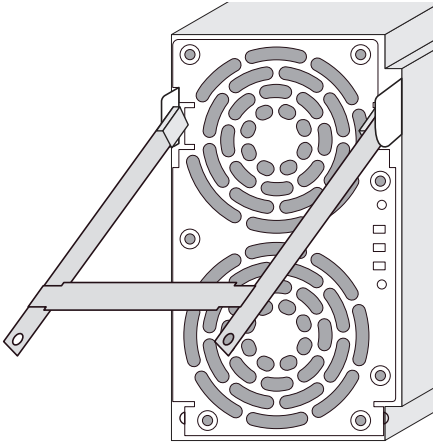
*The 700/1200 W AC PSU does not have a switch for turning the unit on and off. Remove the plug from the electrical outlet to disconnect power to the 700/1200 W AC PSU. Make sure that this connection is easily accessible.*

*Make sure that the 700/1200 W AC PSU circuit is not overloaded. Use proper over-current protection, such as a circuit-breaker, to prevent over-current conditions.*

## Extreme Networks 600/900 W AC PSU

Figure 25 shows the Extreme Networks 600/900 W AC UL-listed accessory power supply unit (Model # 41050/ PS 2431). This power supply is compatible with the BlackDiamond 8806 switch. The power supply bay can accommodate up to six hot-swappable Extreme Networks 600/900 W AC PSUs.

**Figure 25: Extreme Networks 600/900 W AC PSU**



EX\_015

The front panel on each Extreme Networks 600/900 W AC PSU contains two cooling fans and a handle for insertion and removal of the unit. Airflow enters the front vents of the PSU and exits through the rear vents of the switch. Airflow through the PSU is independent of the airflow through the rest of the switch.

The AC input is located on the switch directly below each installed power supply.



### NOTE

The Extreme Networks 600/900 W AC PSU can be used in combination with an Extreme Networks 700W/1200W AC PSU in the same BlackDiamond 8806 system.

Extreme Networks does not recommend using the 600W/900W AC PSU in combination with an Extreme Networks 1200W DC PSU in the same BlackDiamond 8806 system.



### WARNING!

Field operators must not attempt to open the 600W/900W AC PSU enclosure for any reason; the PSU does not contain user-serviceable parts. In the event of failure, return the defective 600W/900W AC PSU to Extreme Networks for repair or replacement.

## Minimum Software Required




The MSM running in your BlackDiamond 8806 switch requires ExtremeXOS version 11.6.1 (or later) in order to recognize an Extreme Networks 600/900 W AC PSU. In ExtremeXOS releases 11.3.4, 11.4.2, and 11.5.1, the 600/900 W AC PSU is disabled on all chassis. In ExtremeXOS releases earlier than those, the

software does not recognize the 600/900 W AC PSU and the PSU will not be budgeted properly, possibly resulting in PSU shutdown and/or chassis reboot.

## LEDs

The front panel of the Extreme Networks 600/900 W AC PSU provides status LEDs. [Table 10](#) describes the operation of these LEDs.

**Table 10: LEDs on the Extreme Networks 600/900 W AC PSU**

PSU Condition	 Power Green	 Predictive Fail Amber	 Fail Amber
Power supply AC outputs working normally	On	Off	Off
AC input power present/standby output on	Blinking	Off	Off
Current limit on 48 VDC output	On	Off	Blinking
Predictive failure	On	Blinking	Off
No input power to this PSU only	Off	Off	On
No input power to any PSU	Off	Off	Off
Power supply failure	Off	Off	On

## Power Supply Cords

Extreme Networks 600/900 W AC PSU(s) are shipped with both 110 V AC and 220 V AC power supply cords. The 110 V AC power supply cord allows for a maximum DC output power of 600 W. The 220V AC power supply cord allows for a maximum DC output power of 900 W.

All power supply cords provided by Extreme Networks are designed for use in the United States and Canada only. Power supply cords for use outside of North America are typically provided by a third-party distribution center and must meet the following requirements:

- The power supply cord must be agency-certified for the country of use.
- The power supply cord must have an IEC 320 C13 plug to connect to the IEC320 C14 connector on the power supply.
- The power supply cord must have an appropriately rated and approved wall plug applicable to the country of installation.
- The power supply cord must be less than 5 meters long.
- The wire size must be a minimum of 16 AWG (1.0 mm<sup>2</sup>) copper-stranded.



### WARNING!

*Be sure that the source outlet is properly grounded before plugging the AC power cord into the Extreme Networks 600/900 W AC PSU.*



### CAUTION

*The 600/900 W AC PSU does not have a switch for turning the unit on and off. Remove the plug from the electrical outlet to disconnect power to the 600/900 W AC PSU. Make sure that this connection is easily accessible.*

*Make sure that the 600/900 W AC PSU circuit is not overloaded. Use proper over-current protection, such as a circuit-breaker, to prevent over-current conditions.*

## Fuse

The Extreme Networks 600/900 W AC PSU line and neutral legs are both fused. Power to the system may still be live if the neutral fuse is open. This is not a field operator replaceable fuse. In the event of failure, immediately return the Extreme Networks 600/900 W AC PSU for a complete replacement.



### WARNING!

*Field operators must not attempt to configure or replace fuses in Extreme Networks 600/900 W AC PSUs! In the event of failure, immediately return the defective Extreme Networks 600/900 W AC PSU for a complete replacement.*

## Specifications

The 600/900 W AC PSU functions from 90 V to 264 V and 47 Hz to 63 Hz AC Input. Each PSU provides 600 W to the system if the AC input is in the 110 V low-line output power range and 900 W to the system if the AC input is in the 220 V high-line output power range.

A greater number of PSUs are needed to support the load if the low-line power range is used to power the switch. The software determines the maximum available power required for the switch and enables the modules accordingly.

## Combining Different AC PSU Models

When 600/900 W AC PSUs and 700/1200 W AC PSUs are combined in the same BlackDiamond 8806 chassis and are powered on, all PSUs will be budgeted down to the lower powered 600/900 W AC output values to avoid PSU shutdown due to over-current. ExtremeXOS optimizes total system power, avoiding the possibility of over-current, by deciding whether to budget down PSUs with 220 V AC inputs when PSUs with 110 V AC inputs are present, or to keep 110 V AC PSUs disabled.



### CAUTION

*Even though this process avoids the possibility of over-current, an I/O module may be powered off if a 600/900 W AC PSU is added to a BlackDiamond 8806 system running in the following configuration:*

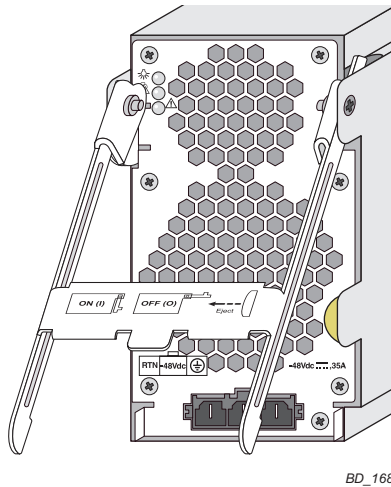
- *The system is powered by three 700/1200 W AC PSUs at 220 V AC.*
- *The system includes four or more PoE I/O modules with a PoE power requirement that falls between 2391 W and 2438 W of inline power.*

To avoid causing an I/O module to be powered off, do not add a 600/900 W AC PSU to an existing BlackDiamond 8806 system running in the configuration listed above. Extreme Networks also recommends that you avoid mixing 220 V AC and 110 V AC inputs when both 600/900 W and 700/1200 W PSUs are present in the same system. When a combination of 220 V AC and 110 V AC inputs is applied, ExtremeXOS is designed to optimize total chassis power for each individual PSU type but not for a mixture of PSU types.

## Extreme Networks 1200 W DC PSU

Figure 26 shows the Extreme Networks 1200 W DC UL-listed accessory power supply unit (Model # 60021/PS 2350). The power supply bays in the BlackDiamond 8800 series switch can accommodate up to six hot-swappable 1200 W DC PSUs.

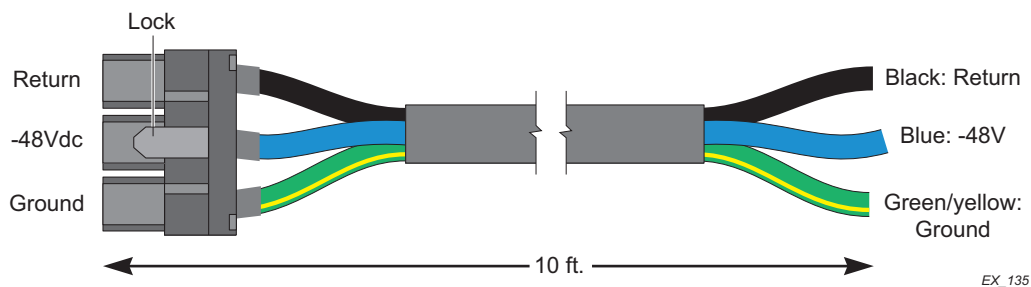
**Figure 26: 1200 W DC PSU**



Airflow enters from the front vents on the 1200 W DC PSU and exits to the rear vents of the switch. Airflow through the 1200 W DC PSU is independent of the airflow that exists through the rest of the switch.

The input DC cable has an input connector on one end and precut wire on the other end that goes to the DC power source (see Figure 27). The connector end has a locking mechanism that locks onto the DC PSU to prevent accidental removal of the input DC cable.

**Figure 27: Input DC Power Cable for the 1200 W DC PSU**



To use the 1200 W DC PSU, you need a -48 V DC power source capable of providing 50 A dedicated power to each 1200 W DC PSU installed in the switch.



### NOTE

Extreme Networks does not recommended using the 1200 W DC PSU in combination with any Extreme Networks AC PSU in the same BlackDiamond 8800 series system. Extreme Networks recommends that DC and AC PSU units



not be used together in the same BlackDiamond switch.

For central DC power connections, the 1200 W DC PSU is intended to be installed only in restricted access locations (dedicated equipment rooms, equipment closets, or the like) in accordance with Articles 110-16, 110-17, and 110-18 of the National Electric Code, ANSI/NFPA-70.



### WARNING!

Field operators must not attempt to open the 1200 W DC PSU enclosure for any reason; the PSU does not contain user-serviceable parts. In the event of failure, return the defective 1200 W DC PSU to Extreme Networks for repair or replacement.




## Minimum Software Required

The MSM installed in your BlackDiamond 8800 series switch must be running ExtremeXOS version 11.3 or later for the system to recognize the DC PSU.

## LEDs

The front panel of the 1200 W DC PSU provides status LEDs. [Table 11](#) identifies the symbols and describes the LED activity.

**Table 11: LEDs on the Extreme Networks 1200 W DC PSU**

PSU Condition	 Power Green	 Predictive Fail Amber	 Fail Amber
Power supply DC outputs working normally	On	Off	Off
DC input power present/standby output on	Blinking	Off	Off
Current limit on 48 VDC output	On	Off	Blinking
Predictive failure	On	Blinking	Off
No input power to this PSU only	Off	Off	On
No input power to any PSU	Off	Off	Off
Power supply failure	Off	Off	On



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**2**

## **Installing BlackDiamond 8800 Series Switches**

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## and Modules

This chapter includes the following sections:

- [Planning Your Site on page 53](#)
- [Meeting Site Requirements on page 54](#)
- [Evaluating and Meeting Cable Requirements on page 60](#)
- [Meeting Power Requirements on page 66](#)
- [Applicable Industry Standards on page 68](#)

By carefully planning your site, you can maximize the performance of your existing network and ensure that it is ready to migrate to future networking technologies.

The information in this chapter is intended for the system administrator, network equipment technician, network manager, or facilities manager responsible for installing and managing the network hardware. The chapter assumes a working knowledge of local area network (LAN) operations and a familiarity with communications protocols that are used on interconnected LANs.

Installation, maintenance, and removal of a switch, chassis, or system components must be done by qualified service personnel only. Qualified service personnel have had appropriate technical training and experience that is necessary to be aware of the hazards to which they are exposed when performing a task and of measures to minimize the danger to themselves or other people.

To learn more about safety issues and to ensure safety compliance, see [Appendix A](#).



## NOTE

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*Before installing or removing any components of the system, or before carrying out any maintenance procedures, you must read the safety information provided in [Appendix A](#) of this guide.*

## Planning Your Site

To install your equipment successfully, you should plan your site carefully. The site planning process has three major parts:

- Meeting site requirements

The physical installation site must meet the following requirements for a safe and successful installation:

- Building and electrical code requirements
  - Environmental, safety, and thermal requirements for the equipment you plan to install
  - Equipment rack requirements
- Evaluating and meeting cable requirements
- After examining your physical site and verifying that all environment requirements are met, evaluate and compare your existing cable plant with the requirements of the Extreme Networks equipment to determine if you need to install new cables.

- Meeting power requirements

To run your equipment safely, you must meet the specific power requirements for each power supply unit installed in the system. For power supply specifications, see “Power Supplies for BlackDiamond 8800 Series Switches” on page 172.

## Meeting Site Requirements

This section describes requirements to consider when preparing your installation site, including:

- [Operating Environment Requirements](#)
- [Rack Specifications and Recommendations](#)

## Operating Environment Requirements

Verify that your site meets all environmental and safety requirements.

Virtually all areas of the United States are regulated by building codes and standards. During the early planning stages of installing or modifying your LAN, it is important that you develop a thorough understanding of the regulations that pertain to your location and industry.

### Building and Electrical Codes

Building and electrical codes vary depending on your location. Comply with all code specifications when planning your site and installing cable. The following sections are provided as a resource to obtain additional information.

Information about major building codes is located at the following websites:

- International Code Council (ICC); 5203 Leesburg Pike; Falls Church, Virginia 22041 USA.  
<http://www.iccsafe.org>  
<http://www.sbcci.org>

Five authorities on electrical codes are:

- National Electrical Code (NEC) Classification (USA only)—a recognized authority on safe electrical wiring. Federal, state, and local governments use NEC standards to establish their own laws, ordinances, and codes on wiring specifications. The NEC classification is published by the National Fire Protection Association (NFPA). The address is NFPA; 1 Batterymarch Park; Quincy, Massachusetts 02169 USA. <http://www.nfpa.org>
- Underwriters’ Laboratory (UL) (USA only)—an independent research and testing laboratory. UL evaluates the performance and capability of electrical wiring and equipment to determine whether they meet certain safety standards when properly used. Acceptance is usually indicated by the words “UL Approved” or “UL Listed.” The address is UL; 333 Pfingsten Road; Northbrook, Illinois 60062-2096 USA. <http://www.ul.com>
- National Electrical Manufacturing Association (NEMA) (USA only)—an organization of electrical product manufacturers. Members develop consensus standards for cables, wiring, and electrical components. The address is NEMA; 1300 N. 17th Street; Rosslyn, Virginia 22209. <http://www.nema.org>
- Electronics Industries Alliance (EIA)—a trade association that develops technical standards, disseminates marketing data, and maintains contact with government agencies in matters relating to

the electronics industry. The address is EIA; 2500 Wilson Boulevard; Arlington, Virginia 22201 USA. <http://www.eia.org>

- Federal Communications Commission (FCC) (USA only)—a commission that regulates all interstate and foreign electrical communication systems that originate in the United States according to the Communications Act of 1934. The FCC regulates all U.S. telephone and cable systems. The address is FCC; 445 12th Street S.W.; Washington, D.C. 20554 USA. <http://www.fcc.gov>

## Wiring Closet Considerations

Be aware of the following recommendations for your wiring closet:

- Be sure that your system is easily accessible for installation and service. See “[Rack Specifications and Recommendations](#)” on page 58 for information.
- Use appropriate AC or DC power, power distribution, and grounding for your specific installation.
- Use a vinyl floor covering in your wiring closet. (Concrete floors accumulate dust, and carpets can cause static electricity.)
- Prevent unauthorized access to wiring closets by providing door locks. Install the equipment in a secured, enclosed, and restricted access location, ensuring that only qualified service personnel have access to the equipment.
- Provide adequate overhead lighting for easy maintenance.
- Be sure that each wiring closet has a suitable ground. All distribution racks and equipment installed in the closet should be grounded.
- Be sure that all system environmental requirements are met, such as ambient temperature and humidity.



### NOTE

*Extreme Networks recommends that you consult an electrical contractor for commercial building and wiring specifications.*

## Temperature

Extreme Networks equipment generates a significant amount of heat. It is essential that you provide a temperature-controlled environment for both performance and safety.

Install the equipment only in a temperature- and humidity-controlled indoor area that is free of airborne materials that can conduct electricity. Too much humidity can cause a fire. Too little humidity can produce electrical shock and fire.

Follow these general thermal recommendations for your wiring closet:

- Be sure that the ventilation in the wiring closet is adequate to maintain a temperature below 104° F (40° C).
- Install a reliable air conditioning and ventilation system.
- Keep the ventilation in the wiring closet running during non-business hours; otherwise, the equipment can overheat.
- Maintain an ambient operating temperature of 32° to 104° F (0° to 40° C).
- Maintain a storage temperature of -40° to 158° F (-40° to 70° C).

**NOTE**

*As with all electrical equipment, Extreme Networks product lifetimes degrade with increased temperature. If possible, temperatures should be kept at approximately 78° F (25° C) or lower.*

## Humidity

To maximize equipment life, keep operating humidity between 50% and 70% relative humidity (non-condensing) during typical operation. The equipment can operate between 10% and 95% relative humidity (non-condensing) for short intervals.

## Chassis Spacing Requirements

Extreme Networks recommends placing no more than three BlackDiamond chassis next to each other because of to chassis-to-chassis heating. Use the following spacing guidelines when you install your BlackDiamond 8800 series switch:

- Leave a minimum of one empty 19-inch rack between two sets of three adjacent BlackDiamond switches.
- or
- Place patch panels between two sets of three adjacent BlackDiamond switches. A patch panel does not require any power and does not generate any heat.

**NOTE**

*Up to five adjacent switches will continue to function without safety concerns. However, product lifetime may degrade with continued exposure to high temperatures in close proximity, and long term reliability may be compromised.*

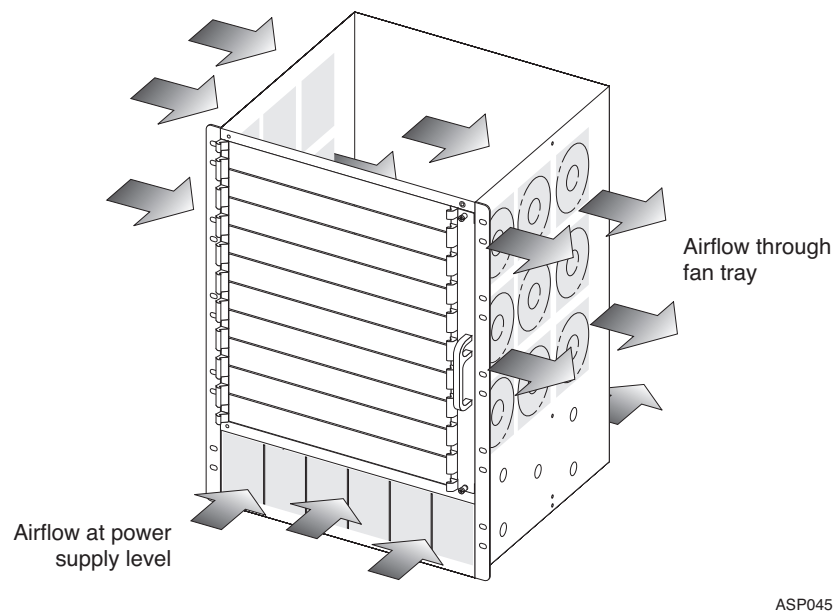
## Chassis Airflow Requirements

To ensure proper airflow through a BlackDiamond switch, refer to the following recommendations when you install the switch:

- BlackDiamond 8800 series switches require a minimum of 1.5 inches (4 cm) around both the left and right sides of the chassis from any cabinet wall or other obstruction for proper airflow.
- Air temperature measured approximately 1 inch (2.5 cm) from the fan inlet should be less than 104 °F (40 °C).

In the BlackDiamond 8800 series switches, air moves through the power supplies independently of the airflow through the modules, as shown in [Figure 28](#).

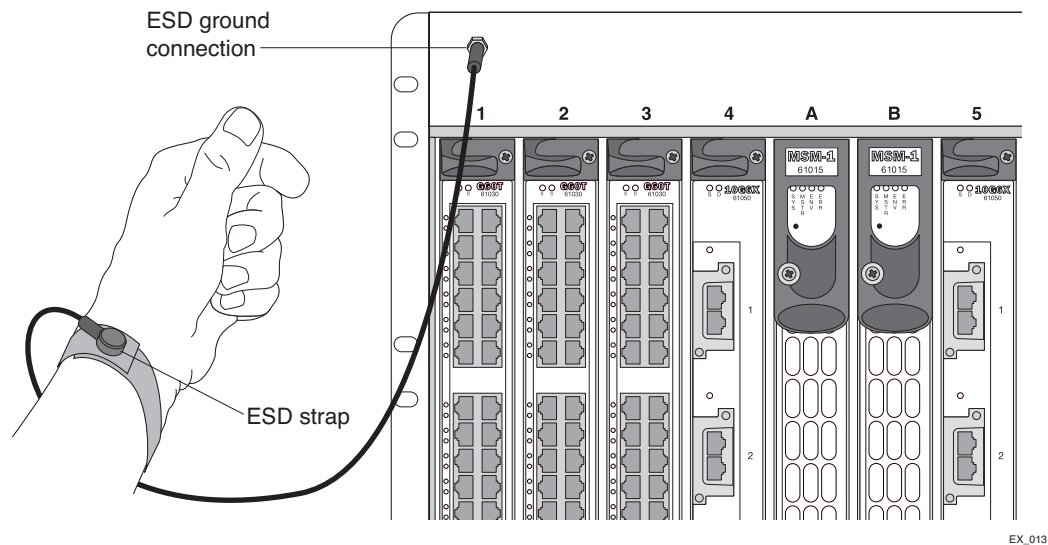


**Figure 28: Airflow Through the BlackDiamond 8810 Chassis**

## Electrostatic Discharge

Your system must be protected from static electricity or electrostatic discharge (ESD). Take the following measures to ensure optimum system performance:

- Remove materials that can cause electrostatic generation (such as synthetic resins) from the wiring closet. Check the appropriateness of floor mats and flooring.
- Connect metal chassis, conduit, and other metals to ground using dedicated grounding lines.
- Use electrostatically safe equipment and the ESD-preventive wrist strap that is provided with your equipment. All switches have ESD-preventive wrist strap connectors and are shipped with an ESD-preventive wrist strap as shown in [Figure 29](#).

**Figure 29: Using an ESD-preventive Wrist Strap**

EX\_013

## Rack Specifications and Recommendations

Racks should conform to conventional standards. In the United States, use EIA Standard RS-310C: Racks, Panels, and Associated Equipment. In countries other than the United States, use IEC Standard 297. In addition, verify that your rack meets the basic mechanical, space, and earthquake requirements that are described in this section.

### Mechanical Recommendations for the Rack

Use equipment racks that meet the following mechanical recommendations:

- Use an open style, 19-inch rack to facilitate easy maintenance and to provide proper ventilation.
- Use a rack made of steel or aluminum.
- The rack should use the universal mounting rail hole pattern that is identified in IEC Standard 297.
- The rack should have designated earth grounding connections (typically on the base).
- The rack must meet earthquake safety requirements equal to that of the installed chassis.
- The mounting holes should be flush with the rails to accommodate the chassis.
- The rack should support approximately 600 pounds (272 kilograms).

### Protective Grounding for the Rack

Use a rack grounding kit and a ground conductor that is carried back to earth or to another suitable building ground.

All Extreme Networks switches are designed with mounting brackets that provide solid metal-to-metal connection to the rack. If you do not use equipment racks, you can attach wiring terminals directly to the mounting brackets for appropriate grounding. Extreme Networks switches have grounding terminals that are mounted on the back of the chassis.

At a minimum, follow these guidelines to ground equipment racks to the earth ground:

- CAD weld appropriate wire terminals to building I-beams or earth ground rods.
- Use the appropriate chassis grounding wire for your system, which is dependant upon the available input current to the power supply.
  - For AC systems using a 20A breaker per PSU (SSI AC), the chassis ground can be as small as 14 AWG. The power cable ground should be the same size as the primary.
  - For DC systems using a 15A breaker per PSU (Summit X450a-48tDC switch), the chassis ground can be as small as 14 AWG. The power cable ground should be the same size as the primary.
  - For DC systems using a 40A breaker per PSU (SSI DC), the chassis ground can be as small as 10 AWG. The power cable ground should be the same size as the primary.



#### NOTE

For complete details on power supplies and power supply cords, refer to the following: [Chapter 3, "Power Supply Units for BlackDiamond 8800 Series Switches,"](#) and ["Selecting Power Supply Cords" on page 158 in Appendix A, "Safety Information."](#) Drill and tap wire terminals to equipment racks.

- Position the earth ground as close to the equipment rack as possible to maintain the shortest wiring distance possible.
- Use a ground impedance tester or micro-ohm meter to test the quality of earth ground connection at the chassis. This will insure good grounding between the chassis, rack, and earth ground.



#### NOTE

Because building codes vary worldwide, Extreme Networks strongly recommends that you consult an electrical contractor to ensure proper equipment grounding for your specific installation.

## Space Requirements for the Rack

Provide enough space in front of and behind the switch so that you can service it easily. Allow a minimum of 48 inches (122 cm) in front of the rack and 24 inches (61 cm) behind the rack. When using a relay (two-post) rack, provide a minimum of 24 inches (61 cm) of space behind the mounted equipment. Extra room on each side is optional.

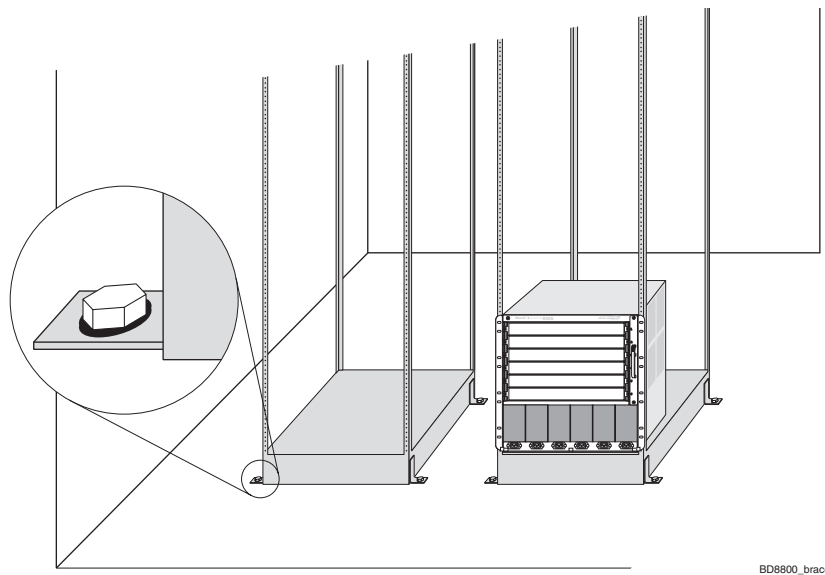


#### WARNING!

The chassis does not have a switch for turning power to the unit on and off. For systems using an AC power supply, power to the chassis is disconnected by removing the wall plug from the electrical outlet. For systems using a DC SSI power supply, power to the chassis can be turned off by lifting the handle on the power supply or by de-energizing the circuit that feeds the power supply, which is usually accomplished by turning off a circuit breaker.

## Securing the Rack

The rack should be attached to the wiring closet floor with 3/8-inch (9.5 mm) lag screws or equivalent hardware. The floor under the rack should be level within 3/16-inch (5 mm). Use a floor-leveling cement compound if necessary or bolt the racks to the floor as shown in [Figure 30](#).

**Figure 30: Properly Secured Rack**

Brace open equipment racks if the channel thickness is less than 1/4 inch (6.4 mm).

## Evaluating and Meeting Cable Requirements

This section describes requirements for the cable you should use when installing your network equipment. It includes:

- [Cabling Standards](#)
- [Cable Labeling and Record Keeping](#)
- [Installing Cable](#)
- [RJ-45 Connector Jackets](#)
- [Radio Frequency Interference](#)

### Cabling Standards

Extreme Networks recommends using the Building Industry Consulting Service International (BICSI) Registered Communications Distribution Designer (RCDD), which is globally recognized as a standard in site planning and cabling. For information, go to:

<http://www.bicsi.org>

### Cable Labeling and Record Keeping

A reliable cable labeling system is essential when planning and installing a network. Maintaining accurate records helps you to:

- Relocate devices easily.
- Make changes quickly.

- Isolate faults in the distribution system.
- Locate the opposite end of any cable.
- Know the types of network devices that your cabling infrastructure can support.

Consider the following recommendations when setting up a cable labeling system suitable for your installation:

- Identify cables by securely attaching a label to all cable ends.
- Assign a unique block of sequential numbers to the group of cables that run between each pair of wiring closets.
- Assign a unique identification number to each distribution rack.
- Identify all wiring closets by labeling the front panel of your Extreme Networks equipment and other hardware.
- Keep accurate and current cable identification records.
- Post records near each distribution rack. Include the following cable drop information: the cable source, destination, and jumper location.

## Installing Cable

Consider the following recommendations when you connect cable to your network equipment:

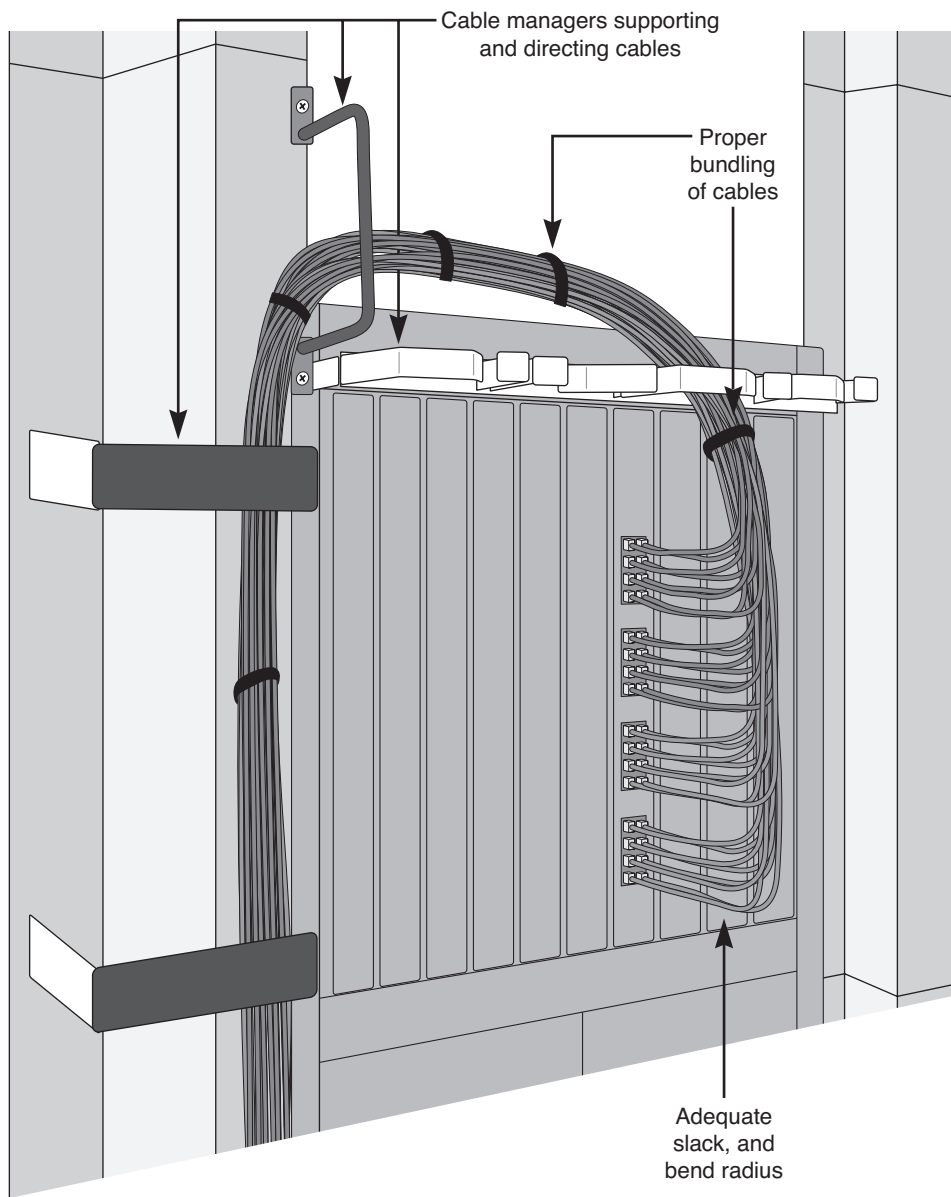
- Examine cable for cuts, bends, and nicks.
- Support cable using a cable manager that is mounted above connectors to avoid unnecessary weight on the cable bundles.
- Use cable managers to route cable bundles to the left and right of the network equipment to maximize accessibility to the connectors.
- Provide enough slack, approximately 2 to 3 inches (5.08 to 7.62 cm), to provide proper strain relief as shown in [Figure 31](#).
- Bundle cable using velcro straps to avoid injuring cables.
- If you build your own cable, be sure that cable is properly crimped.
- When installing a patch panel using twisted pair wiring, untwist no more than 1 inch (2.54 cm) of the cable to avoid radio frequency (RF) interference.
- Discharge the RJ-45 Ethernet cable before plugging it into a port on the switch.
- Use plenum-rated cable when it is necessary for safety and fire rating requirements. Consult your local building codes to determine when it is appropriate to use plenum-rated cable, or refer to IEC standard 850.
- Keep all ports and connectors free of dust.



### CAUTION

*Unshielded twisted pair (UTP) cable can build up ESD charges when being pulled into a new installation. Before connecting any category 5 UTP cable to the switch, discharge ESD from the cable by plugging the RJ-45 connector into a LAN Static Discharge device or use an equivalent method.*

**Figure 31: Properly Installed and Bundled Cable**



SPG\_006

## Fiber Optic Cable

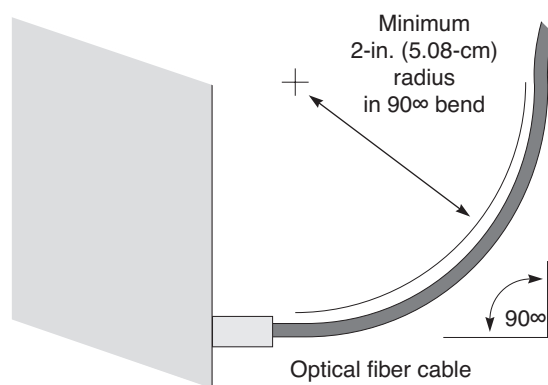
Fiber optic cable must be handled carefully during installation. Every cable has a minimum bend radius, for example, and fibers will be damaged if the cables are bent too sharply. It is also important not to stretch the cable during installation. We recommend that the bend radius for fiber optic cable equal 2 inches (5.08 cm) minimum for each 90 degree turn as shown in [Figure 32](#).



### NOTE

*Kinks and sharp bends can destroy or impair the cable's ability to convey light pulses accurately from one end of the cable to the other. Use care in dressing the optical fiber cables: provide satisfactory strain relief to support the cable and maintain an adequate bend radius at all cable turns, particularly where the cable connects to the I/O module.*

**Figure 32: Bend Radius for Fiber Optic Cable**



SPG\_002

## Cable Distances

[Table 12](#) shows cable media types and maximum distances that support reliable transmission in accordance with international standards, except where noted.

**Table 12: Media Types and Maximum Distances**

Standard	Media Type	Mhz•Km Rating	Maximum Distance (Meters)
1000BASE-SX (850 nm optical window)	50/125 µm multimode fiber	400	500
	50/125 µm multimode fiber	500	550
	62.5/125 µm multimode fiber	160	220
	62.5/125 µm multimode fiber	200	275
1000BASE-LX (1300 nm optical window)	50/125 µm multimode fiber	400	550
	50/125 µm multimode fiber	500	550
	62.5/125 µm multimode fiber	500	550
	10/125 µm single-mode fiber	–	5,000
1000BASE-LX70 (1550 nm optical window)	10/125 µm single-mode fiber*	–	10,000
	10/125 µm single-mode fiber	–	70,000

**Table 12: Media Types and Maximum Distances (Continued)**

Standard	Media Type	Mhz•Km Rating	Maximum Distance (Meters)
1000BASE-T	Category 5 and higher UTP cable	–	100
100BASE-TX	Category 5 and higher UTP cable	–	100
10BASE-T	Category 3 and higher UTP cable	–	100

\* Proprietary to Extreme Networks. Connections between two Extreme Networks 1000BASE-LX interfaces that use 10/125  $\mu$ m single-mode fiber can use a maximum distance of 10,000 meters.

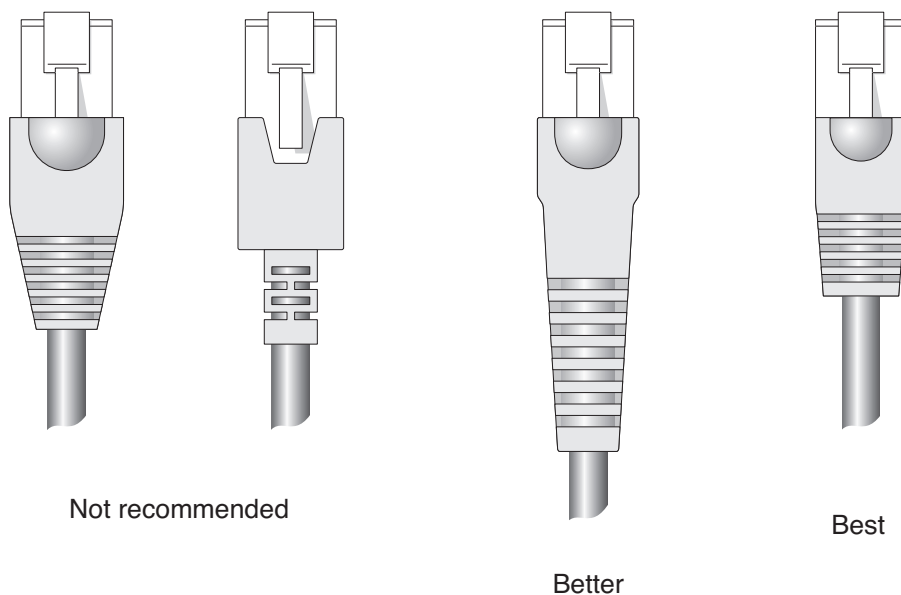
## RJ-45 Connector Jackets

Use RJ-45 cable with connector jackets that are flush with the connector or that have connectors with a no-snag feature.

Using cable with jackets that are wider than the connectors can cause:

- Connectors that are not properly aligned with the port.
- Crowded cable installation, which can cause connectors to pop out of the port.

Figure 33 shows examples of connector jacket types that are not recommended, as well as those that are recommended.

**Figure 33: RJ-45 Connector Jacket Types**

SPG\_001



## Radio Frequency Interference

If you use UTP cabling in an installation, take precautions to avoid RF interference. RF interference can cause degradation of signal quality, and, in an Ethernet network environment, can cause excessive collisions, loss of link status, or other physical layer problems that can lead to poor performance or loss of communication.

To prevent RF interference, avoid the following situations:

- Attaching UTP cable to AC power cables
- Routing UTP cable near antennas, such as a ham radio antenna
- Routing UTP cable near equipment that could exhibit RF interference, such as ARC welding equipment
- Routing UTP cable near electrical motors that contain coils
- Routing UTP cable near air conditioner units
- Routing UTP cable near electrical transformers

In areas or applications where these situations cannot be avoided, use fiber optic cabling or shielded twisted pair cabling (STP).

## Meeting Power Requirements

This section describes power requirements, including:

- [PoE Devices](#)
- [Power Supply Requirements](#)
- [AC Power Cable Requirements](#)
- [Uninterruptible Power Supply Requirements](#)

### PoE Devices

When connecting power over Ethernet (PoE) devices to a PoE switch, all connections between the PoE device and the switch must remain within the same building and must use a low-voltage power distribution system per IEEE 802.3af.

### Power Supply Requirements

Adhere to the following requirements to operate your Extreme Networks equipment safely:

- Be sure that your equipment is placed in an area that accommodates the power consumption and component heat dissipation specifications.
- Be sure that your power supply meets the site power or AC power requirements of the network equipment.
- When connecting power to installed equipment, avoid connecting through an extension cord or power strip.
- If your switch includes more than one power supply, connect each power supply to different, independent power sources.

If a power source fails, it will affect only the switch power supply to which it is connected. If all switch power supplies are connected to a single power source, the entire switch is vulnerable to a power source failure.

For power specifications of the BlackDiamond power supplies, see [Appendix B, “Technical Specifications.”](#)

## AC Power Cable Requirements

Use an AC power cable appropriate for your country. Check your local electrical codes and regulatory agencies for power cable requirements. The countries listed in [Table 13](#) have additional requirements as listed in the table.

**Table 13: AC Power Cable Requirements**

Country	Requirements
USA and Canada	<ul style="list-style-type: none"> <li>The cable set must be UL-approved and CSA-certified.</li> <li>The minimum specification for the flexible cable is No. 18 AWG (1.5 mm<sup>2</sup>), Type SVT or SJT, 3-conductor.</li> <li>The cable set must have a rated current capacity of at least the amount rated for each specific product.</li> <li>The attachment plug must be either an Earth-grounding type with a NEMA 5-15P (10 A, 110 V) configuration or a NEMA L6-15P (10 A, 208/240 V)</li> </ul>
Denmark	The supply plug must comply with section 107-2-D1, standard DK2-1a or DK2-5a.
Switzerland	The supply plug must comply with SEV/ASE 1011.
Argentina	The supply plug must comply with Argentinian standards.



### NOTE

*When using dual power supplies, make sure that each AC power supply attaches to an independent power source.*

## Replacing the Power Cable

If the power cable plug is unsuitable and must be replaced, connect the power supply wires for the switch according to the following scheme:

- Brown wire to the Live (Line) plug terminal, which may be marked with the letter “L” or colored red.
- Blue wire to the Neutral plug terminal, which may be marked with the letter “N” or colored black.
- Yellow/Green wire to the Ground plug terminal, which may be marked with the letter “E” (the Earth symbol) or colored yellow/green.

## Uninterruptible Power Supply Requirements

An uninterruptible power supply (UPS) is a device that sits between a power supply (such as a wall outlet) and a device (such as a switch) to prevent outages, sags, surges, and bad harmonics from adversely affecting the performance of the device.

A UPS traditionally can perform the following functions:

- Absorb relatively small power surges.
- Smooth out noisy power sources.
- Continue to provide power to equipment during line sags.
- Provide power for some time after a blackout has occurred.

In addition, some UPS or UPS plus software combinations provide the following functions:

- Automatically shut down equipment during long power outages.

- Monitor and log power supply status.
- Display the voltage (current draw) of the equipment.
- Restart equipment after a long power outage.
- Display the voltage currently on the line.
- Provide alarms on certain error conditions.
- Provide short circuit protection.

## Selecting a UPS

To determine UPS requirements for your switch, answer these questions:

- What are the amperage requirements?
- What is the longest potential time period that the UPS would be required to supply backup power?
- Where will the UPS be installed?
- What is the maximum transition time that your installation will allow?



### NOTE

*Extreme Networks recommends that you use a UPS that provides online protection.*

## Calculating Volt-Amperage Requirements

To determine the minimum volt-amperage requirements for your UPS:

- 1 Locate the voltage and amperage requirements for each piece of equipment. These numbers are usually located on a sticker on the back or bottom of your equipment.
- 2 Multiply the numbers together to get Volt-Amps (VA):  

$$VA = \text{Volts} \times \text{Amperes}$$
- 3 Add together the VA from all the pieces of equipment to find the total VA requirement.  
 To determine the minimum volt-amperage requirements for your UPS, we recommend that you add 30% to the total.

## UPS Transition Time

Transition time is the time that is necessary for the UPS to transfer from utility power to full-load battery power. For Extreme Networks products, a transition time of less than 20 milliseconds is required for optimum performance.

## Applicable Industry Standards

For more information, see the following ANSI/TIA/EIA standards:

- ANSI/TIA/EIA-568-A—discusses the six subsystems of a structured cabling system.
- ANSI/TIA/EIA-569-A—discusses design considerations.
- ANSI/TIA/EIA-606—discusses cabling system administration.
- ANSI/TIA/EIA-607—discusses commercial building grounding and bonding requirements.

You can access these standards at:

<http://www.ansi.org>

or

<http://www.tiaonline.org>



## 5

## Installing the BlackDiamond 8800 Series Chassis

This chapter includes the following sections:

- [Unpacking the BlackDiamond 8806 Chassis on page 72](#)
- [Unpacking the BlackDiamond 8810 Chassis on page 75](#)
- [Pre-installation Requirements on page 78](#)
- [Attaching the Mid-Mount Brackets on page 78](#)
- [Rack-Mounting the BlackDiamond 8800 Series Chassis on page 80](#)
- [Grounding the BlackDiamond 8800 Series Chassis on page 83](#)
- [Initial Management Access on page 85](#)

This chapter describes how to install the following BlackDiamond chassis models:

- BlackDiamond 8806 chassis
- BlackDiamond 8810 chassis

The BlackDiamond 8800 series chassis fits into a standard 19-inch (48.26 cm) rack. You can install the switch either flush against the back of the rack or in a mid-mount position to give you more access behind the rack.

**NOTE**

---

*Read the information in this chapter thoroughly before you attempt to install the BlackDiamond 8806/12804 switch.*

**CAUTION**

---

*Correct lifting of the BlackDiamond 8800 series chassis requires two people.*

*Before you lift a BlackDiamond 8800 series chassis, make sure the chassis is empty to prevent unnecessary weight. This will also prevent damage to the system components due to possible system chassis flex when lifting.*

# Unpacking the BlackDiamond 8806 Chassis



## NOTE

Do not remove the nylon straps until you are ready to open the chassis package.



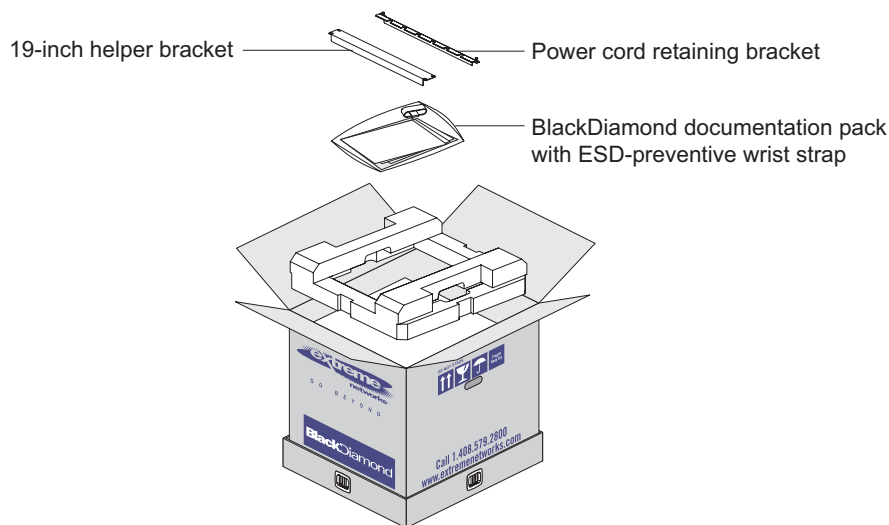
## CAUTION

The BlackDiamond 8806 chassis weighs almost 65 pounds. Proper lifting and moving of the chassis requires two people.

To unpack the BlackDiamond 8806 chassis:

- 1 Remove the nylon straps from around the shipping carton.
- 2 Open the top flaps and remove the accessories and documentation pack from the shipping carton (see [Figure 34](#)). Lift out the packing foam.

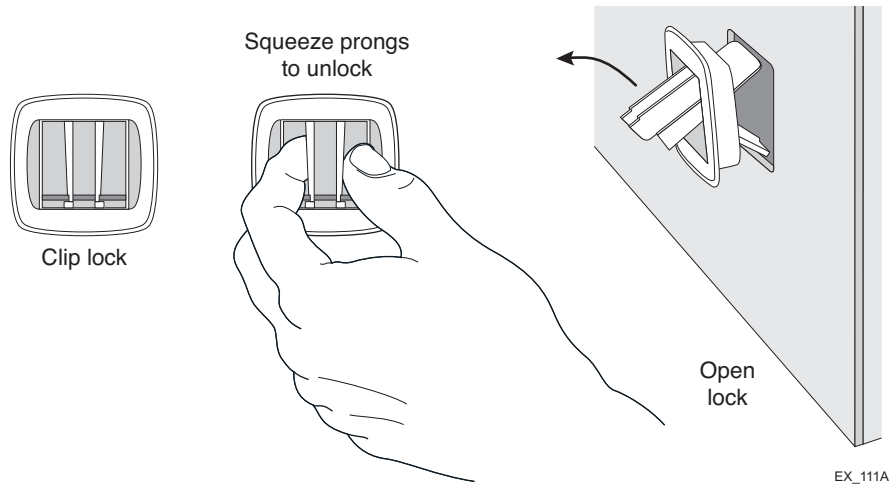
**Figure 34: Removing Accessories from the BlackDiamond 8806 Chassis Shipping Carton**



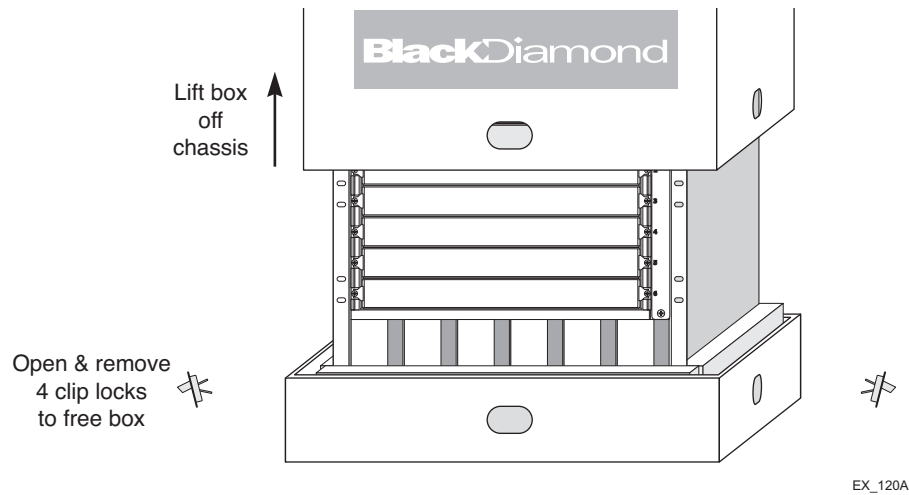
EX\_110

- 3 Release the clip locks (see [Figure 35](#)).
  - a Place your thumb and index finger inside the clip lock to grasp the prongs.
  - b Squeeze the prongs inward, applying equal pressure on each side.
  - c Pull the prongs outward until the clip lock is released from the carton.
 Repeat these steps to release each remaining clip lock.



**Figure 35: Clip Locks on the BlackDiamond 8806 Chassis Shipping Carton**

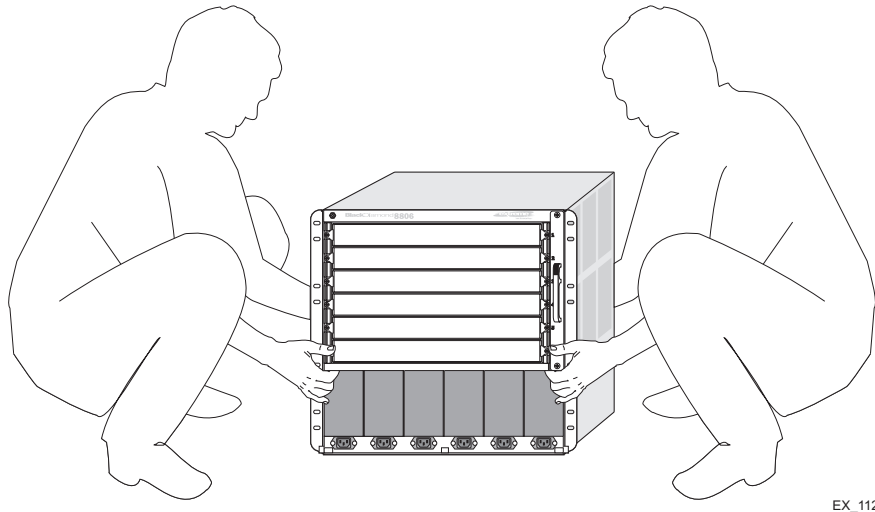
- 4 Slide the shipping carton up over the BlackDiamond 8806 chassis (see [Figure 36](#)).

**Figure 36: Removing the Carton from the BlackDiamond 8806 Chassis**

- 5 Unwrap the chassis.

- At each side of the chassis, place one hand in an empty power supply bay and the other hand in the recessed hand-hold on the back panel of the chassis. Carefully lift the BlackDiamond 8806 chassis off the foam cushion and onto the floor (see [Figure 37](#)).

**Figure 37: Correct Method for Lifting the BlackDiamond 8806 Chassis**



#### CAUTION

*Do not use the fan tray handle to lift or maneuver the BlackDiamond 8806 chassis. This handle is not designed to support the weight of the chassis.*

Verify that the following items are included in the shipping carton:

- BlackDiamond 8806 chassis with four installed blank front panels
- Power cord retaining bracket
- 19-inch helper bracket (installation tray)
- BlackDiamond documentation pack with ESD-preventive wrist strap



#### NOTE

*Save all packaging, clip locks, and box pieces for future use in the event that the BlackDiamond 8806 chassis must be moved to another location or returned to Extreme Networks, Inc.*

# Unpacking the BlackDiamond 8810 Chassis



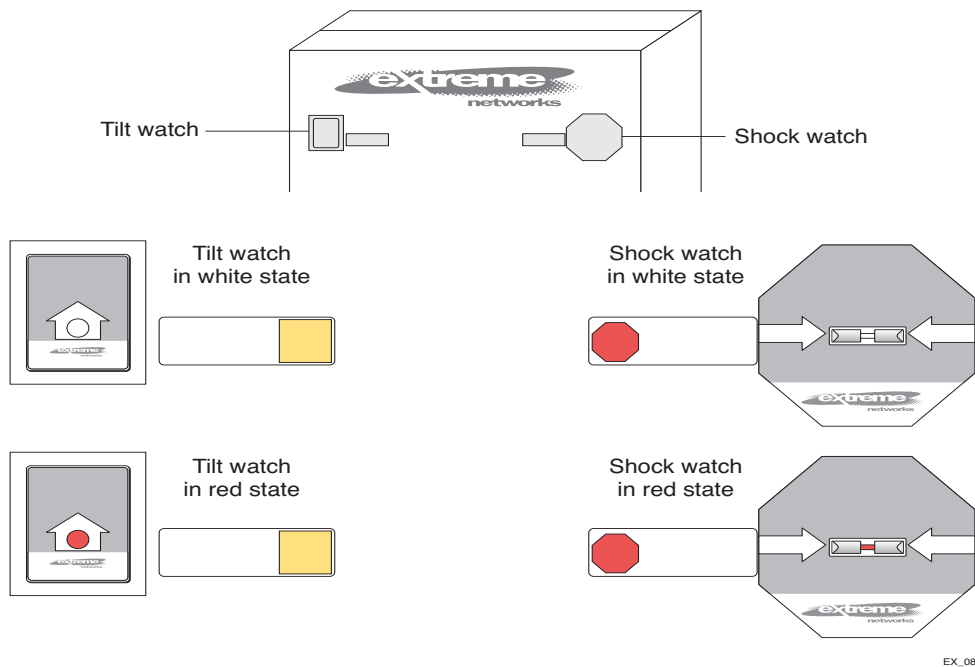
## CAUTION

The BlackDiamond 8810 chassis weighs almost 80 pounds. Proper lifting and moving of the chassis requires two people.

To unpack the BlackDiamond 8810 chassis:

- 1 Verify that the Tilt Watch and Shock Watch indicators display a **white** state as shown in [Figure 38](#).

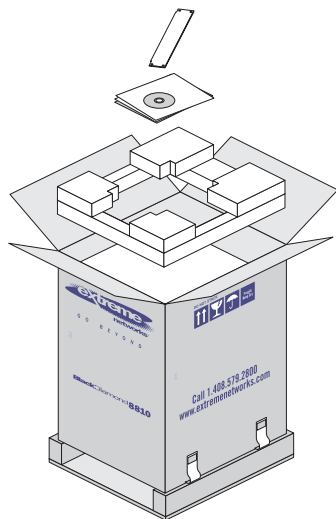
**Figure 38: Tilt Watch and Shock Watch Indicators**



## CAUTION

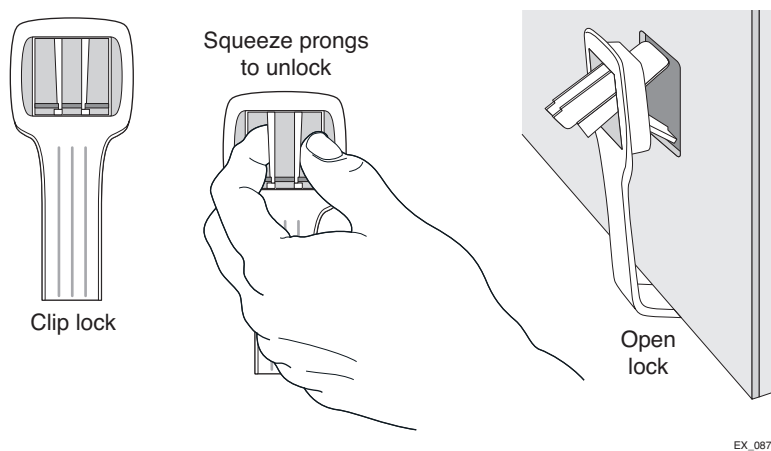
Do not proceed with unpacking the chassis if either the Tilt Watch indicator or the Shock Watch indicator displays a red warning state. Immediately contact Extreme Networks if a red condition occurs.

- 2 Open the flaps and remove the contents from the upper shipping carton (see [Figure 34](#)).

**Figure 39: Removing Contents from the BlackDiamond 8810 Upper Shipping Carton**

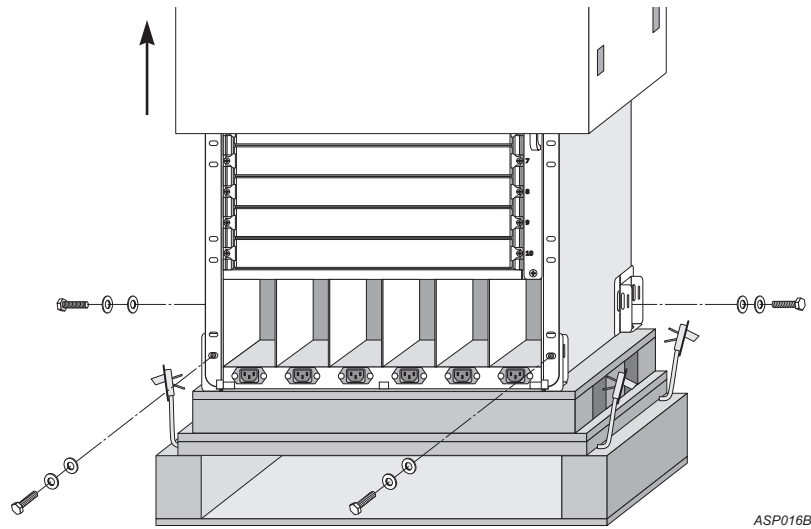
ASP024

- 3 Release the clip locks as shown in [Figure 35](#).
  - a Place your thumb and index finger inside the clip lock to grasp the prongs.
  - b Squeeze the prongs inward applying equal pressure on each side.
  - c Pull the prongs outward until the clip lock is released from the carton.
 Repeat these steps to release each remaining clip lock.

**Figure 40: Clip Locks on the BlackDiamond 8810 Shipping Carton**

EX\_067B

- 4 Lift the BlackDiamond 8810 shipping carton up and off the chassis (see [Figure 41](#)).
- 5 Remove all four restraining bolts that hold the BlackDiamond 8810 chassis to the shipping brackets on the shipping pallet (see [Figure 41](#)).

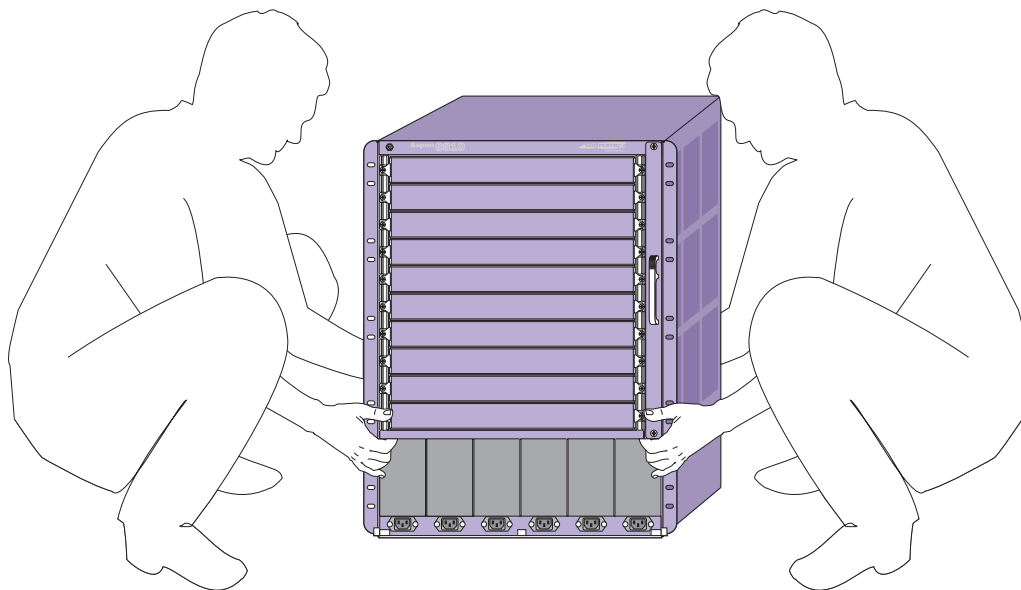
**Figure 41: Unpacking the BlackDiamond 8810 Chassis**

- 6 At each side of the chassis, place one hand in an empty power supply bay and the other hand in the recessed hand-hold on the back panel of the BlackDiamond 8810 chassis (see [Figure 37](#)).

**CAUTION**

*Do not use the fan tray handle to lift or maneuver the BlackDiamond 8810 chassis. This handle is not designed to support the weight of the chassis.*

- 7 Carefully lift the BlackDiamond 8810 chassis off the shipping pallet and onto the floor as shown in [Figure 37](#).

**Figure 42: Correct Method for Lifting the BlackDiamond 8810 Chassis**

**NOTE**

*Save all packaging, bolts, washers, and clip locks, as well as the box and pallet, for future use in the event that the chassis must be moved to another location or returned to Extreme Networks.*

Verify that the following items are included in the shipping carton:

- BlackDiamond 8810 chassis with eight installed blank front panels
- Power cord retaining bracket
- 19-inch helper bracket (installation tray)
- BlackDiamond documentation pack with ESD-preventive wrist strap

**NOTE**

*Save all packaging, clip locks, and box pieces for future use in the event that the BlackDiamond 8810 chassis must be moved to another location or returned to Extreme Networks, Inc.*

## Pre-installation Requirements

The following tools, equipment, and resources are required for installing the BlackDiamond 8800 series chassis:

- ESD-preventive wrist strap (provided)
- 19-inch helper bracket (provided)
- For installing the chassis in a mid-mount position in the rack:
  - Optional BlackDiamond 8806/12804 mid-mount kit, part number 65046. Order this kit separately from the chassis.
  - or
  - Optional BlackDiamond 8810 mid-mount kit, Model 41141. Order this kit separately from the chassis.
  - #2 Phillips screwdriver
- Rack-mount screws appropriate for your organization's rack system, as follows:
  - 4 screws to attach the helper bracket
  - 12 screws to secure the chassis in the rack

The screw size will vary based on your organization's rack system; screws are not provided.

- Screwdriver appropriate for the rack-mounting screws you will use

The screwdriver size will vary based on the requirements of your organization's rack system.

## Attaching the Mid-Mount Brackets

The BlackDiamond 8800 series chassis has attached rack-mounting flanges for a front-mount rack installation. To install the chassis in a mid-mount position in the rack, attach the optional mid-mount brackets as described in this section.

**CAUTION**

*The BlackDiamond 8806 chassis weighs almost 65 pounds., and the BlackDiamond 8810 chassis weighs almost 80 pounds. Proper lifting and moving of the chassis requires two people.*

To attach the mid-mount brackets:

- 1 Set the empty chassis in an upright position on a secure flat surface.
- 2 Determine the locations for the mid-mount brackets.

**NOTE**

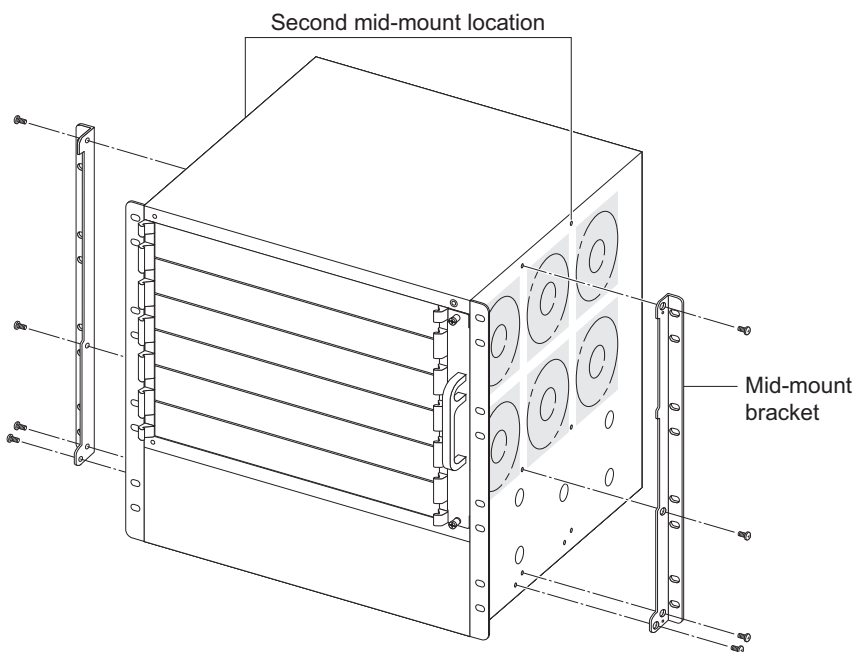
*Each side of the chassis has two sets of mounting holes to provide two positions for attaching the mid-mount brackets.*

- 3 Identify the left and right brackets.

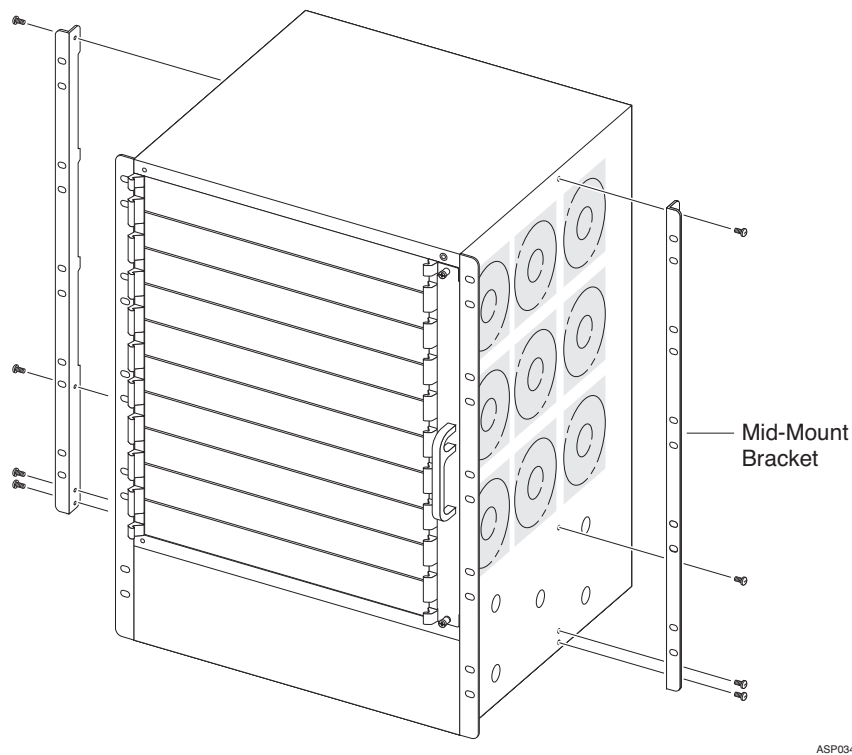
Each mid-mount bracket is clearly marked for placement on either the right or left side, as viewed from the front of the chassis.

- 4 On each side of the chassis, attach the appropriate mid-mount bracket using the eight screws provided in the kit (see [Figure 43](#) and [Figure 44](#)).

**Figure 43: Attaching the Mid-mount Brackets to the BlackDiamond 8806 Chassis**



EX\_136

**Figure 44: Attaching the Mid-mount Brackets to the BlackDiamond 8810 Chassis**

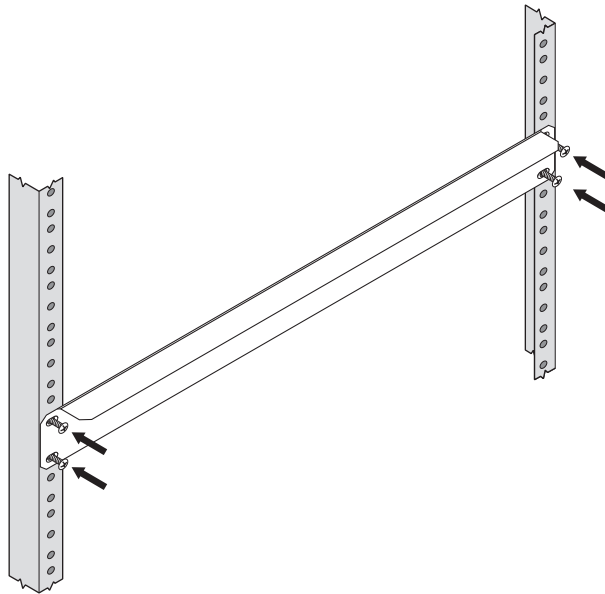
## Rack-Mounting the BlackDiamond 8800 Series Chassis

To mount the BlackDiamond 8800 series chassis in a rack:

- 1 Locate the 19-inch helper bracket that is shipped with the BlackDiamond 8800 series chassis.
- 2 Identify the rack location where the chassis will be installed.
- 3 Using four rack mounting screws, attach the helper bracket to the system rack immediately below the chassis location (see [Figure 45](#)).

You must provide the screws for attaching the helper bracket.



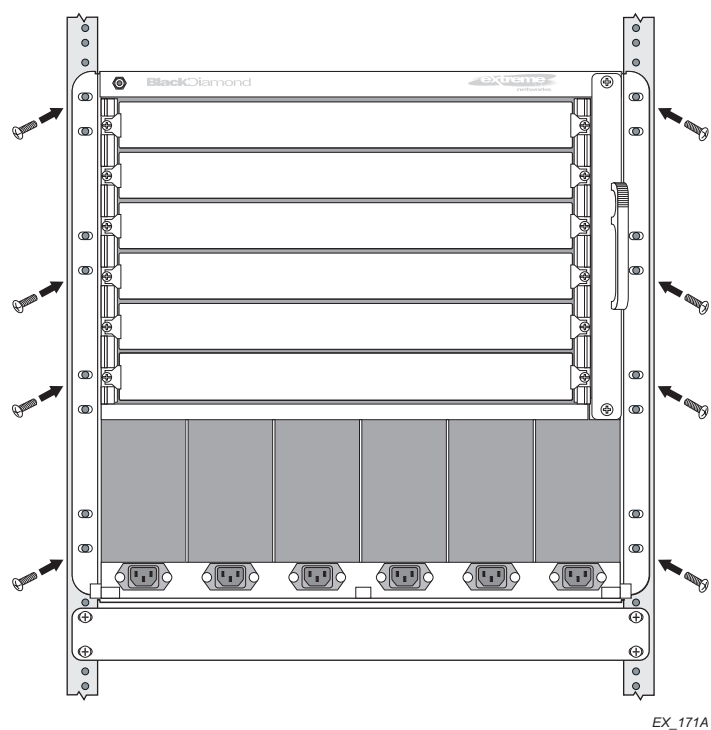
**Figure 45: Mounting the 19-inch Helper Bracket onto the System Rack**

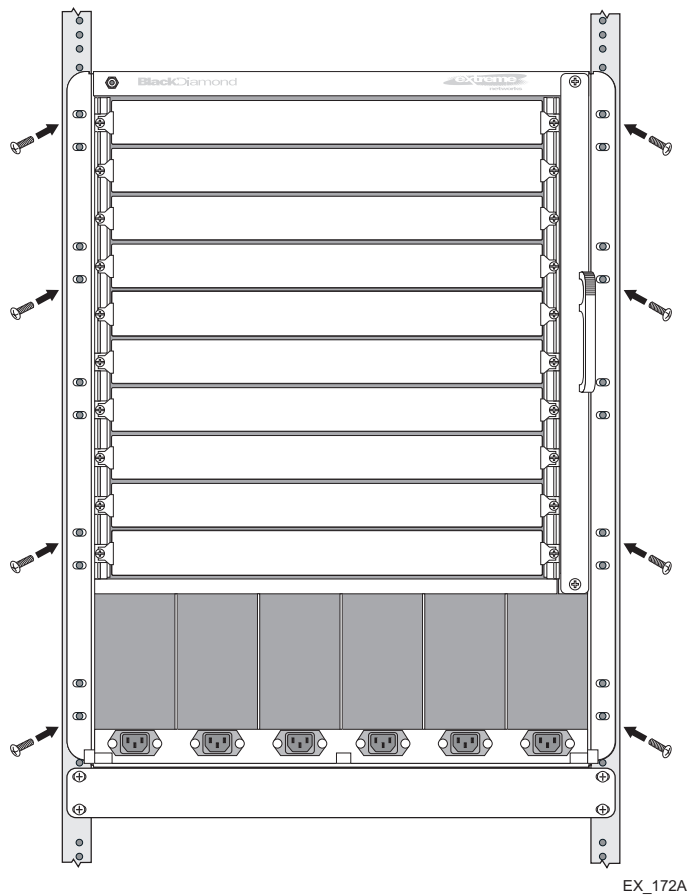
EX\_086A

- 4 Lift the back of the empty BlackDiamond 8800 series chassis onto the 19-inch helper bracket.
- 5 Slowly guide the chassis into the system rack until the mounting brackets are flush against the rack uprights.
- 6 Secure the chassis to the system rack using eight rack mounting screws. (Screws are not provided.) Be sure that the screws are secure. Refer to [Figure 46](#) and figure for the screw locations.

**NOTE**

*Figure 46 and figure show a standard rack mount. For mid-mount installation, use the same mounting locations shown in the figure, but insert the screws through the designated slot locations of the mid-mount brackets.*

**Figure 46: Securing the BlackDiamond 8806 Chassis to a Rack**

**Figure 47: Securing the BlackDiamond 8810 Chassis to a Rack**

- 7 Remove the helper bracket from the system rack after the chassis is secured. Save the bracket for future use if you remove the chassis from the rack.

## Grounding the BlackDiamond 8800 Series Chassis

Although grounding the BlackDiamond 8800 series chassis is optional, it is recommended. A grounding point with integrated pem-nuts is provided on the back of the chassis.

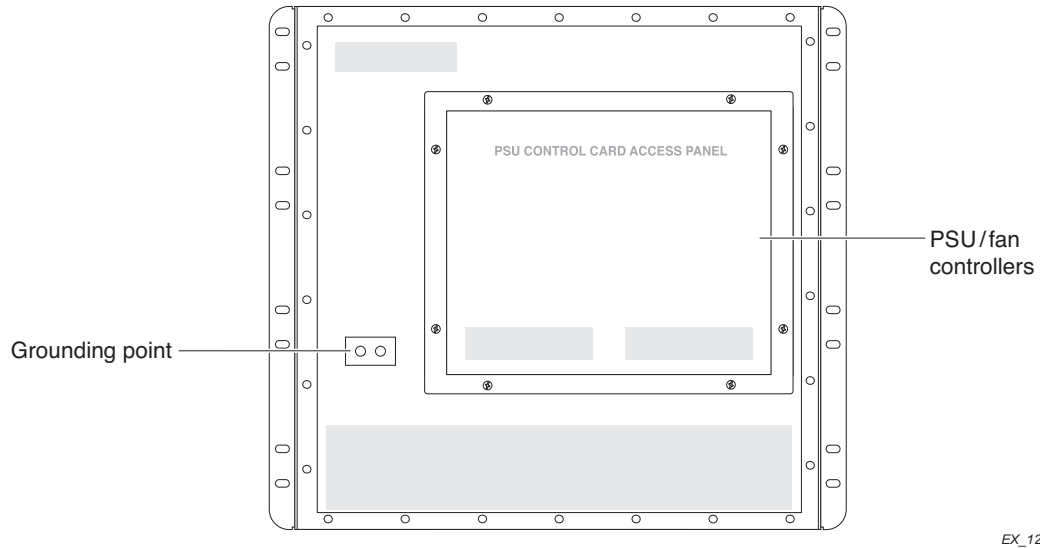
You need the following materials to ground the chassis:

- Two 10-24 screws
- One copper, standard barrel 2-hole compression grounding lug, type LDC, equivalent to Panduit part number LCD4-14A-L or Thomas & Betts part number: LCN4-14
- Appropriate grounding wire for your system, based on the available input current for the power supply:
  - For AC systems using a 20A breaker per PSU (SSI AC), the chassis ground can be as small as 14 AWG.
  - For DC systems using a 50A breaker per PSU (SSI DC), the chassis ground can be as small as 10 AWG.

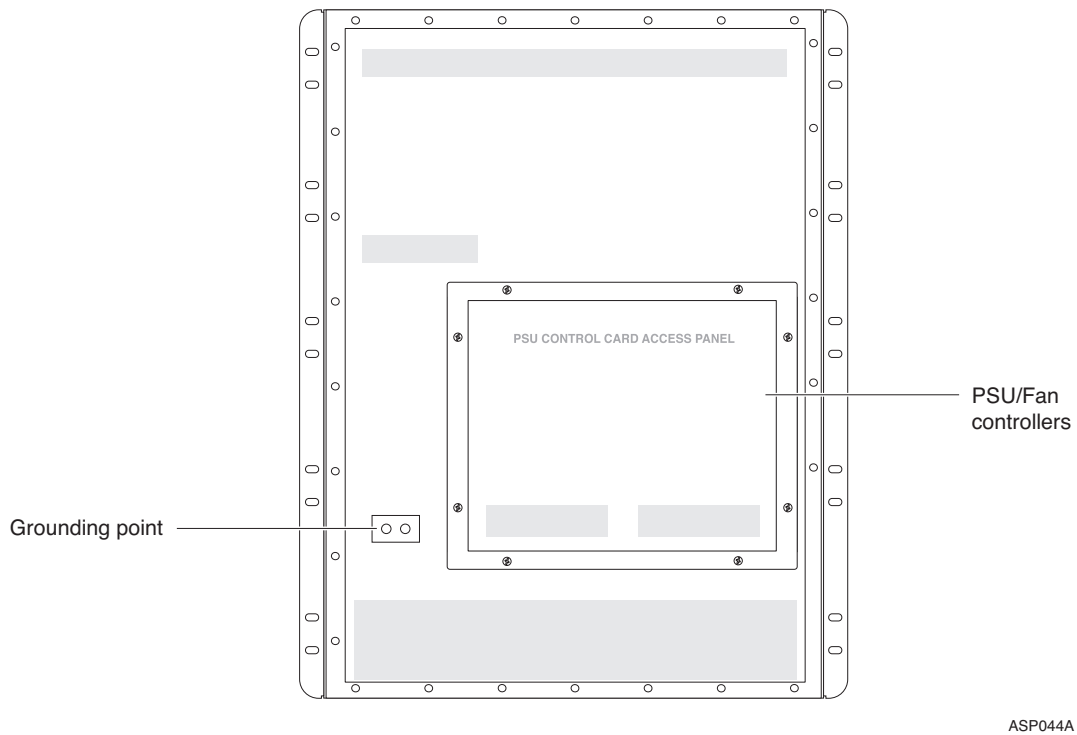
To ground the chassis:

- 1 Locate the grounding point on the back of the chassis (Figure 48 and Figure 49).

**Figure 48: Back of BlackDiamond 8806 Chassis**



**Figure 49: Back of BlackDiamond 8810 Chassis**



- 2 Strip 0.5-inch (1.2-cm) of insulation from the stranded copper wire cable.
- 3 Insert the stripped wire into the cable lug.

**CAUTION**

*Be sure that no copper is visible between the lug and the cable insulation.*

- 4 Crimp the lug onto the cable according to the manufacturer's specifications.
- 5 Insert the screws through the lug and into the grounding point on the back of the chassis.
- 6 Connect the other end of the wire to a known reliable earth ground point at your site.

## Initial Management Access

For instructions on accessing the switch for initial management setup, see ["Initial Management Access" on page 114](#).



## 6 Installing Power Supply Units in the BlackDiamond 8800 Series Switches

This chapter includes the following topics:

- [Safety on page 87](#)
- [PSU Compatibility on page 88](#)
- [Installing an Extreme Networks AC PSU on page 90](#)
- [Installing an Extreme Networks 1200 W DC PSU on page 94](#)

The chapter describes how to install and remove each power supply model used with the BlackDiamond 8800 series switches.

### Safety

Only trained service personnel should perform service to Extreme Networks switches and their components. Trained service personnel have read all related installation manuals, have the technical training and experience necessary to be aware of the hazards to which they are exposed in performing a task, and are aware of measures to minimize the danger to themselves or other persons.

Before installing an Extreme Networks PSU into your network:

- Read the latest installation and safety information provided in this chapter and in [Appendix A, "Safety Information."](#)
- See [Appendix A, "Safety Information"](#) for additional information regarding regulatory compliance certifications.



#### NOTE

*For central DC power connections, the 1200 W DC PSU is intended to be installed only in restricted access locations (dedicated equipment rooms, equipment closets, or the like) in accordance with Articles 110-16, 110-17, and 110-18 of the National Electric Code, ANSI/NFPA-70. All wiring methods involving the DC input cable assembly must be performed according to the relevant articles of the National Electrical Code.*



#### CAUTION

*Building codes vary worldwide; therefore, Extreme Networks strongly recommends that you consult an electrical contractor to ensure proper equipment grounding and power distribution for your specific installation.*



#### WARNING!

*Field operators must not attempt to open the PSU enclosure for any reason; the PSU does not contain user-serviceable parts. In the event of failure, return the defective PSU to Extreme Networks for repair or replacement.*

**WARNING!**

Extreme Networks AC PSUs do not have switches for turning the unit on and off. Remove the wall plug from the electrical outlet to disconnect the power to an Extreme Networks AC PSU. Make sure that this connection is easily accessible.

When the PSU is outside the chassis (not installed), do not plug the PSU into an electrical outlet. Plugging an uninstalled AC PSU into an electrical outlet exposes you to a hazardous energy and is a potential fire hazard.

**WARNING!**

Extreme Networks DC PSUs do not have switches for turning the unit on and off. Make sure that the DC circuit is de-energized before connecting or disconnecting the DC power cord at the DC power socket on an Extreme Networks DC PSU.

## PSU Compatibility

The BlackDiamond power supply units are intended for use in specific BlackDiamond switches. [Table 14](#) lists the BlackDiamond 8800 series switches and their compatible power supply units.

**Table 14: PSU Compatibility in BlackDiamond 8800 Series Switches**

BlackDiamond Switch	Compatible PSU	Compatibility Notes
BlackDiamond 8806	600W/900W AC PSU <b>AND/OR</b> 700W/1200W AC PSU <b>OR</b> 1200W DC PSU	The 700/1200 W AC PSU and the 600/900 W AC PSU can be used together in the same BlackDiamond 8806 system only.  Extreme Networks <b>does not</b> recommended using the 600/900 W AC PSU or the 700/1200 W AC PSU in combination with a 1200W DC PSU.
BlackDiamond 8810	700W/1200W AC PSU <b>OR</b> 1200W DC PSU	Extreme Networks <b>does not</b> recommended using the 700/1200 W AC PSU in combination with a 1200W DC PSU.

## Combining Different AC PSU Models

When 600/900 W AC PSUs and 700/1200 W AC PSUs are combined in the same BlackDiamond 8806 chassis and are powered on, all PSUs will be budgeted down to the lower-powered 600/900 W AC output values to avoid PSU shutdown due to over-current.

ExtremeXOS optimizes total system power, avoiding the possibility of over-current, by deciding whether to budget down PSUs with 220 V AC inputs when PSUs with 110 V AC inputs are present, or to keep 110 V AC PSUs disabled.

**CAUTION**

Even though this process avoids the possibility of over-current, an I/O module may be powered off if a 600/900 W AC PSU is added to a BlackDiamond 8806 system running in the following configuration:

- The system is powered by three 700/1200 W AC PSUs at 220 V AC.
- The system includes four or more PoE I/O modules with a PoE power requirement that falls between 2391 W and 2438 W of inline power.



To avoid causing an I/O module to be powered off, do not add a 600/900 W AC PSU to an existing BlackDiamond 8806 system running in the configuration listed above. Extreme Networks also recommends that you avoid mixing 220 V AC and 110 V AC inputs when both 600/900 W and 700/1200 W PSUs are present in the same system. When a combination of 220 V AC and 110 V AC inputs is applied, ExtremeXOS is designed to optimize total chassis power for each individual PSU type but not for a mixture of PSU types.

**NOTE**

*Extreme Networks does not recommended using the 1200 W DC PSU in combination with any Extreme Networks AC PSU in the same BlackDiamond 8800 series system. Extreme Networks recommends that DC and AC PSU units not be used together in the same BlackDiamond switch.*

## Minimum Software Requirements

In order for the system to recognize an Extreme Networks 600/900 W AC PSU, the MSM installed in your BlackDiamond 8806 switch requires ExtremeXOS version 11.6.1 (or later). In ExtremeXOS releases 11.3.4, 11.4.2, and 11.5.1, the 600/900 W AC PSU is disabled on all chassis. In ExtremeXOS releases earlier than those, the software does not recognize the 600/900 W AC PSU and the PSU will not be budgeted properly, possibly resulting in PSU shutdown and/or chassis reboot.

The 700/1200 W AC PSU is supported by all versions of ExtremeXOS.

For the system to recognize the 1200W DC PSU, the MSM in your BlackDiamond 8800 series switch must be running ExtremeXOS version 11.3 or later.

## Power Supply Cords for AC Power Supplies

Extreme Networks AC PSU(s) are shipped with both 110 V AC and 220 V AC power supply cords. [Table 15](#) shows the maximum DC power output allowed by these power cords when used with each AC power supply.

**Table 15: AC Power Supply Cords**

Cord Type	Maximum DC Output Power	
	600/900 W AC PSU	700/1200 W AC PSU
110 V AC	600 W	700 W
220 V AC	900 W	1200 W

All power supply cords provided by Extreme Networks are designed for use only in the United States, Canada, and Mexico. Power supply cords for use outside of North America are typically provided by a third-party distribution center and must meet the following requirements:

- The power supply cord must be agency-certified for the country of use.
- The power supply cord must have an IEC 320 C13 plug to connect to the IEC320 C14 connector on the power supply.
- The power supply cord must have an appropriately rated and approved wall plug applicable to the country of installation.

- The power supply cord must be less than 5 meters long.
- The wire size must be a minimum of 16 AWG (1.0 mm<sup>2</sup>) copper-stranded.

**WARNING!**

*Be sure that the source outlet is properly grounded before plugging the AC power cord into the Extreme Networks AC PSU.*

## Installing an Extreme Networks AC PSU

This section describes how to install either of the following Extreme Networks UL-listed accessory power supply units:

- 700/1200 W AC PSU (Model # 60020/PS 2336)

This power supply is compatible with the BlackDiamond 8806 switch and the BlackDiamond 8810 switch.

- 600/900 W AC PSU (Model # 41050/ PS 2431)

This power supply is compatible only with the BlackDiamond 8806 switch.

The power supply bay in the BlackDiamond 8800 series switch can accommodate up to six hot-swappable AC PSUs.

**NOTE**

*In a BlackDiamond 8806 system, the Extreme Networks 700W/1200 W AC PSU can be combined with an Extreme Networks 600/900 W AC PSU in the same chassis.*

*Extreme Networks does not recommended using the 700/1200 W AC PSU with an Extreme Networks 1200 W DC PSU in the same BlackDiamond 8800 series switch.*

**WARNING!**

*Field operators must not attempt to open the AC PSU enclosure for any reason; the PSU does not contain user-serviceable parts. In the event of failure, return the defective 700/1200 W AC PSU to Extreme Networks for repair or replacement.*

**CAUTION**

*To ensure proper cooling of the PSU, do not block the front vents of the PSU or the rear vents of the switch.*

## Required Tools and Equipment

You need the following tools and equipment to install or remove an Extreme Networks AC PSU:

- ESD-preventive wrist strap
- Power supply cord (110 V AC, 220 V AC, or applicable to country of use)  
A power cord for use in the United States is provided with each PSU. For use outside of the United States, this PSU requires a power supply cord set certified for the country of use. See the input specifications in [Table 22 on page 172](#).
- Thermal protective gloves (required for removal)

## Installing the PSU



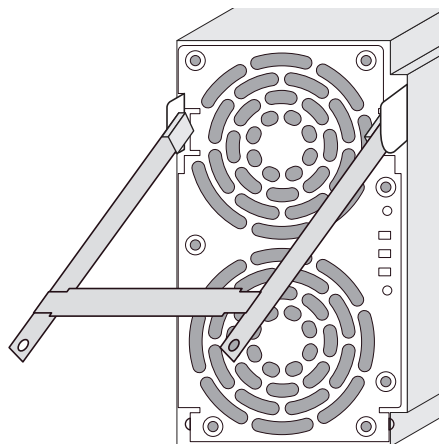
### CAUTION

*Make sure that the Extreme Networks AC PSU circuit is not overloaded. Use proper over-current protection, such as a circuit-breaker, to prevent over-current conditions.*

To install an Extreme Networks AC PSU:

- 1 Attach an ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the top-left corner of the switch front panel.
- 2 Verify that the PSU is right side up and the locking handle is open (see [Figure 50](#)).

**Figure 50: Extreme Networks AC PSU with Locking Handle Open**



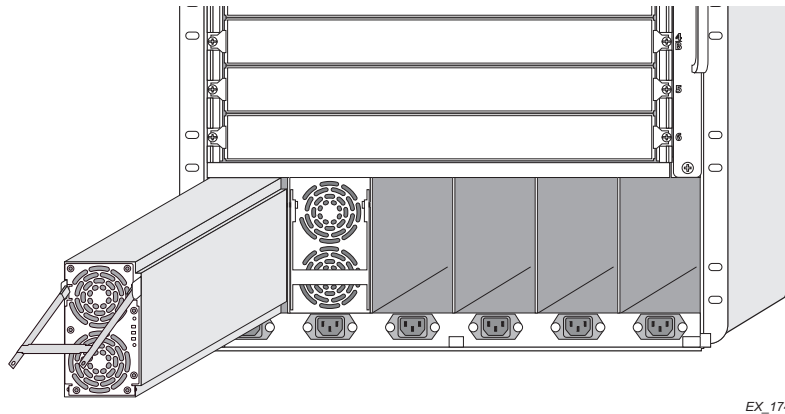
EX\_015

- 3 Carefully slide the AC PSU all the way into the power supply bay (see [Figure 51](#)).



### CAUTION

*Do not slam the AC PSU into the system switch backplane. Use the locking handle to secure the AC PSU in the power supply bay.*

**Figure 51: Inserting an AC PSU into the Power Supply Bay**

- 4 Secure the AC PSU in the power supply bay by pushing down on the locking handle until it clicks into place.
- 5 If you are replacing a power supply, you do not need to unplug the AC power cord. For a newly installed power supply, connect the AC power supply cord:
  - a If necessary, remove the power cord retaining bracket as described in [Chapter 3, “BlackDiamond AC Power Cord Retaining Brackets.”](#)
  - b Connect the new AC power cord to the AC input on the front of the switch and to the wall outlet on the other end. Then re-install the power cord retaining bracket.
  - c Re-install the power cord retaining bracket as described in [Chapter 3, “BlackDiamond AC Power Cord Retaining Brackets.”](#)

To install additional Extreme Networks AC PSUs, repeat steps 2 through 5.

**NOTE**

*Leave the ESD strap permanently connected to the switch, so that the strap is always available when you need to handle ESD-sensitive components.*

## Removing or Replacing an Extreme Networks AC PSU

**CAUTION**

*The AC PSU may be hot to the touch; use thermal protective gloves when handling the PSU during removal.*

To remove or replace an Extreme Networks AC PSU:

- 1 Attach an ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the top-left corner of the switch front panel (if not already attached).

- 2 For the AC power cord:
  - If you are replacing only the power supply and you will use the existing AC power cord for the new PSU, you do not need to unplug the AC power cord.
  - If you are removing and replacing an AC power cord:
    - Remove the power cord retaining bracket as described in [“Disconnecting a BlackDiamond 8810 AC Power Cord” on page 127](#) or [“Removing the BlackDiamond 8806 AC Power Cord Retainer Channel” on page 130](#).
    - Completely disconnect and remove the old power cord.
    - Connect the new AC power cord to the AC input on the front of the switch and then connect the opposite end of the AC power cord to the wall outlet.
    - After the cord is connected, re-install the power cord retaining bracket.
- 3 Lift the handle on the PSU.
- 4 Pull the handle of the PSU to disconnect the PSU from the power connector at the back of the power supply bay. Slide the PSU partway out of the bay.
- 5 Wearing thermal protective gloves, place both hands underneath the PSU to support the weight as it is pulled out from the switch.
- 6 To install a replacement PSU, follow the steps under [“Installing the PSU” on page 91](#).




**NOTE**

Leave the ESD strap permanently connected to the switch, so that the strap is always available when you need to handle ESD-sensitive components.

## LEDs on the 700/1200 W AC PSU

The front panel of the Extreme Networks 700/1200 W AC PSU provides status LEDs. [Table 16](#) describes the LED activity.

**Table 16: LEDs on the 700/1200 W AC PSU**

PSU Condition	 Power Green	 Predictive Fail Amber	 Fail Amber
Power supply AC outputs working normally	On	Off	Off
AC input power present/standby output on	Blinking	Off	Off
Current limit on 48 VDC output	On	Off	Blinking
Predictive failure	On	Blinking	Off
No input power to this PSU only	Off	Off	On
No input power to any PSU	Off	Off	Off
Power supply failure	Off	Off	On

## Installing an Extreme Networks 1200 W DC PSU

The Extreme Networks 1200 W DC UL-listed accessory power supply unit (Model # 60021/PS 2350) is compatible with the BlackDiamond 8806 switch and the BlackDiamond 8810 switch. The power supply bay in the BlackDiamond 8800 series switch can accommodate up to six hot-swappable 1200 W DC PSUs.



### WARNING!

*Field operators must not attempt to open the 1200 W DC PSU enclosure for any reason; the PSU does not contain user-serviceable parts. In the event of failure, return the defective 1200 W DC PSU to Extreme Networks for repair or replacement.*

## Required Tools and Equipment

You need the following tools and equipment to install or remove a 1200 W DC PSU:

- ESD-preventive wrist strap
- Input DC power cable (provided with the DC PSU)
- -48 V DC power source capable of providing 50 A dedicated power to each 1200 W DC PSU installed in the switch
- Thermal protective gloves (required for removal)

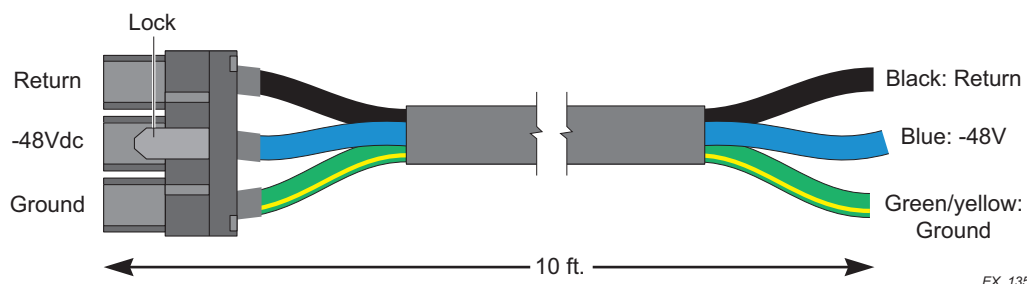
## Installing the DC Wiring

The input DC cable for the 1200 W DC PSU is shipped with the DC PSU (see [Figure 52](#)). You *must* use this cable with the DC PSU. This section provides information about DC power specifications to be used in connecting the DC cable to the DC source voltage.

Wiring the DC power cord to your facility DC source voltage must be performed by a qualified, licensed electrician. After the DC power cord is connected to a permanent DC voltage source by a qualified, licensed electrician, you can remove, replace, and maintain the 1200 W DC PSU without further electrician assistance. However, make sure that the DC circuit is de-energized before connecting or disconnecting the DC power cord on PSU.

All wiring methods involving the DC input cable assembly must be performed according to the relevant articles of the National Electrical Code.

**Figure 52: Input DC Power Cable for the 1200 W DC PSU**



EX\_135

Each 1200 W DC PSU must be powered by a 50 A dedicated power source that delivers -40 to -72 VDC of constant power. Power distribution to the 1200 W DC PSU shall be provided using the -48 VDC harness provided. Power to the 1200 W DC PSU can be from either a 50 A UL-approved overcurrent protection breaker or an SELV- approved power source in accordance with IEC 60950-1 utilizing 50 A overcurrent protection.

The input DC cable has an input connector on one end and precut wire on the other end that goes to the DC power source. The input connector has a locking mechanism that locks onto the DC PSU to prevent accidental removal of the input DC cable.

If necessary, use appropriate termination lugs for 8 AWG (10 mm<sup>2</sup>) copper-stranded wire on the ends of the cable to connect to the DC power source.

The blue termination (-48 V) connects to a 50 A overcurrent protection circuit device, and the black (return) termination connects directly to the RTN bus of the DC power source. The green/yellow termination (ground) must connect to the same earth ground point as the switch.

## Installing a 1200 W DC PSU

To install an Extreme Networks 1200 W DC PSU:

- 1 Attach an ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the top-left corner of the switch front panel.



### CAUTION

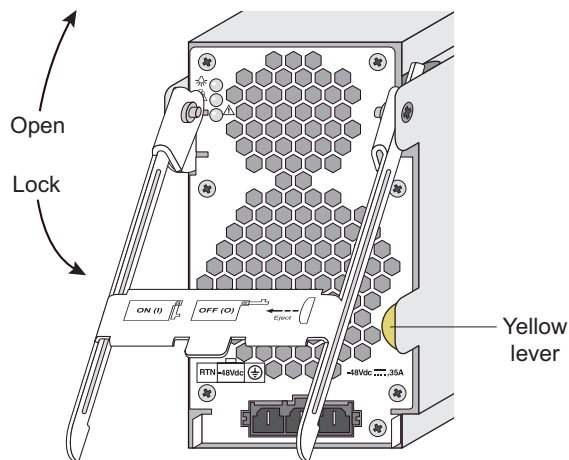
*Be sure that the grounding point on the back of the switch chassis is securely connected to earth ground. For information about grounding the switch, see [“Grounding the BlackDiamond 8800 Series Chassis”](#) on page 83.*

- 2 Verify that the 1200 W DC PSU is right side up, and press the yellow locking lever to the left while lifting the handle (see [Figure 53](#)).



### NOTE

*Do not connect the input DC cable to the DC PSU before you install the DC PSU in the switch.*

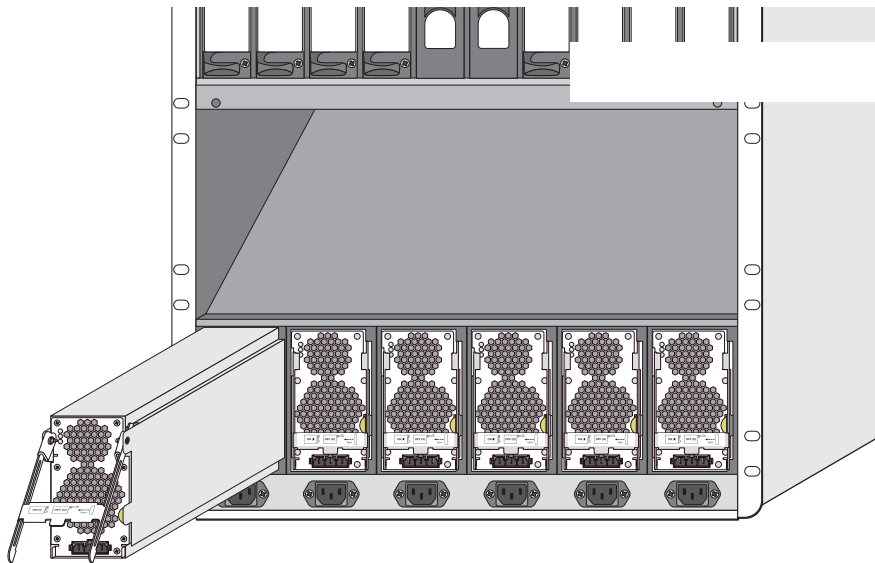
**Figure 53: Locking Handle on the 1200 W DC PSU**

EX\_130

- Carefully slide the 1200 W DC PSU all the way into the power supply bay (see [Figure 54](#)). Be sure that the DC PSU is fully seated in the switch.

**CAUTION**

*Do not slam the 1200 W DC PSU into the chassis backplane.*

**Figure 54: Installing the 1200 W DC PSU in the Power Supply Bay**

EX\_131

- Verify that the DC power is turned off at the source.

**CAUTION**

*Always verify that the DC circuit is de-energized before you connect the input cable to the 1200 W DC PSU.*



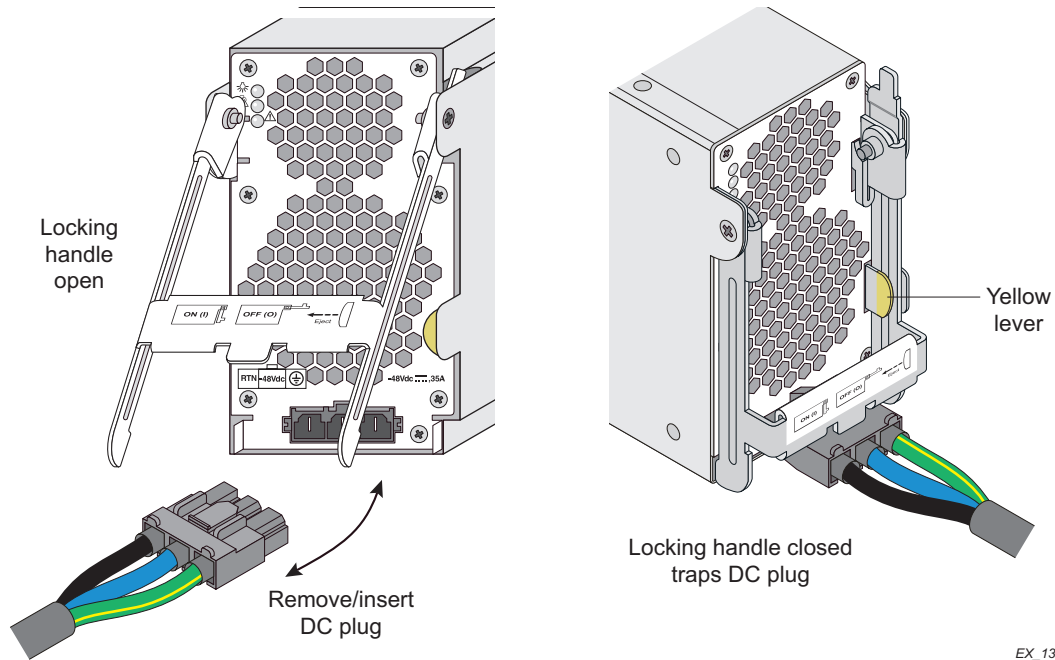
- 5 Connect the input DC cable to the front of the 1200 W DC PSU as shown in [Figure 55](#).

**NOTE**

*An AC power cord is not required for proper functioning of the DC PSU.*

- 6 Rotate the locking handle down to latch the input cable connector onto the DC PSU.

**Figure 55: Connecting the Input Cable to the 1200 W DC PSU**



- 7 Secure the 1200 W DC PSU in the power supply bay by pushing down on the locking handle until it clicks in place.

**NOTE**

*The DC PSU does not energize until the locking handle latches.*

**CAUTION**

*When you route the DC cable harnesses, minimize stress on the cables. It is important to route each of the outermost cables out the opposite side of installation to maximize the bend radius and to avoid stress on the cables. For example, you should route the leftmost cable harness across the switch so that it exits through the right side of the grate. Route the rightmost cable harness across the switch so that it exits through the left side of the grate. The four middle cables can route in either direction.*

- 8 Energize the DC circuit for the 1200 W DC PSU.

To install additional 1200 W DC PSUs, repeat steps [2](#) through [8](#).

**NOTE**

Leave the ESD strap permanently connected to the switch, so that the strap is always available when you need to handle ESD-sensitive components.

## Removing a 1200 W DC PSU

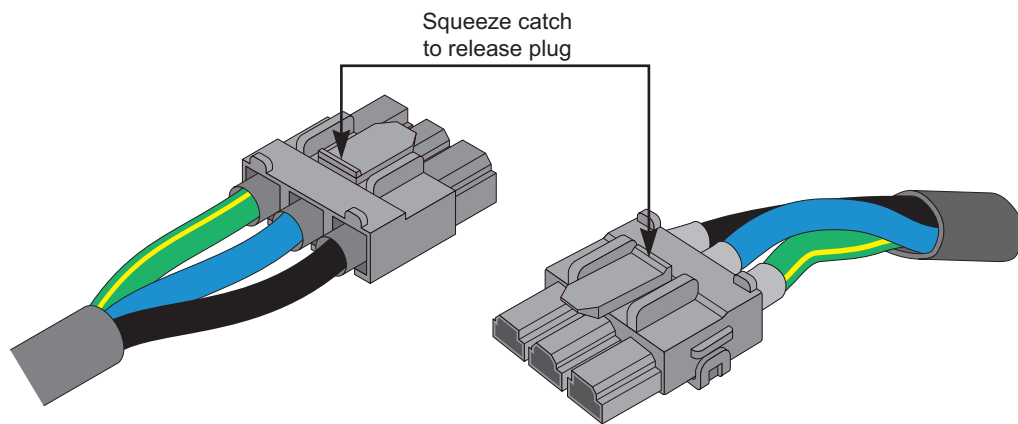
**CAUTION**

The 1200 W DC PSU may be hot to the touch; use thermal protective gloves to handle the 1200 W DC PSU during removal.

To remove an Extreme Networks 1200 W DC PSU:

- 1 Attach an ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the top-left corner of the switch front panel (if not already attached).
- 2 De-energize the DC circuit for the 1200 W DC PSU to be removed.
- 3 Press the yellow lever on the DC PSU to the left while you lift the handle on the PSU.
- 4 Disconnect the cable from the front of the DC PSU by pressing down the catch (see [Figure 56](#)) and pulling out the cable.

**Figure 56: DC Cable Connector on the 1200 W DC PSU**



EX\_133

**WARNING!**

Always be sure that the 1200 W DC PSU does not have the input cabled connected at any time when the DC PSU is not installed in the switch. Do not remove the DC PSU from the switch before disconnecting the input DC cable from the PSU.

- 5 Pull the handle of the PSU to disconnect the PSU from the power connector at the back of the power supply bay. Slide the PSU partway out of the bay.
- 6 Wearing thermal protective gloves, place both hands underneath the PSU to support the weight as it is pulled out from the switch.

To remove additional 1200 W DC PSUs, repeat steps 2 through 6.




**NOTE**

Leave the ESD strap permanently connected to the switch, so that the strap is always available when you need to handle ESD-sensitive components.

## LEDs

The front panel of the 1200 W DC PSU provides status LEDs. [Table 17](#) identifies the symbols and describes the LED activity.

**Table 17: Extreme Networks 1200 W DC PSU LEDs**

PSU Condition	 Power Green	 Predictive Fail Amber	 Fail Amber
Power supply DC outputs working normally	On	Off	Off
DC input power present/standby output on	Blinking	Off	Off
Current limit on 48 V DC output	On	Off	Blinking
Predictive failure	On	Blinking	Off
No input power to this PSU only	Off	Off	On
No input power to any PSU	Off	Off	Off
Power supply failure	Off	Off	On



## 7

## Installing Modules and Establishing Initial Management Access

The chapter describes how to install the MSMs and I/O modules in the BlackDiamond 8800 series switches and how to set up initial management access for the switch. All module types are hot-swappable.

The chapter includes the following sections:

- [Module Slot Assignments on page 101](#)
- [Distinguishing an MSM from an I/O Module on page 102](#)
- [Installing a BlackDiamond 8800 Series Module on page 102](#)
- [Making Network Interface Cable Connections on page 106](#)
- [Installing a Backup MSM on page 108](#)
- [Verifying the Module Installation on page 108](#)
- [Removing a BlackDiamond 8800 Series Module on page 109](#)
- [Blank Front Panels on page 110](#)
- [Installing or Removing an External Compact Flash Memory Card on page 113](#)
- [Initial Management Access on page 114](#)

**NOTE**

*Read the information in this chapter thoroughly before you attempt to install or remove an 8800 series MSM or I/O module.*

**CAUTION**

*Do not attempt to mix modules across Extreme Networks product lines. BlackDiamond 8800 series modules are for use only in a BlackDiamond 8810 or 8806 switch. When a BlackDiamond switch is in use, ExtremeXOS software will not recognize a module from a different product line.*

## Module Slot Assignments

The specific slot locations for I/O modules and MSMs in the chassis are as follows:

- BlackDiamond 8810 switch:
  - Slots 1, 2, 3, 4, 7, 8, 9, and 10 must have I/O modules.
  - Slot 5/A must have an MSM.
  - Slot 6/B can have an MSM or I/O module.
- BlackDiamond 8806 switch:
  - Slots 1, 2, 5, and 6 must have I/O modules.
  - Slot 3/A must have an MSM.
  - Slot 4/B can have an MSM or I/O module.

**NOTE**

The following slots will only operate an MSM: Slot 5/A in the BlackDiamond 8810 chassis; slot 3/A in the BlackDiamond 8806 chassis.

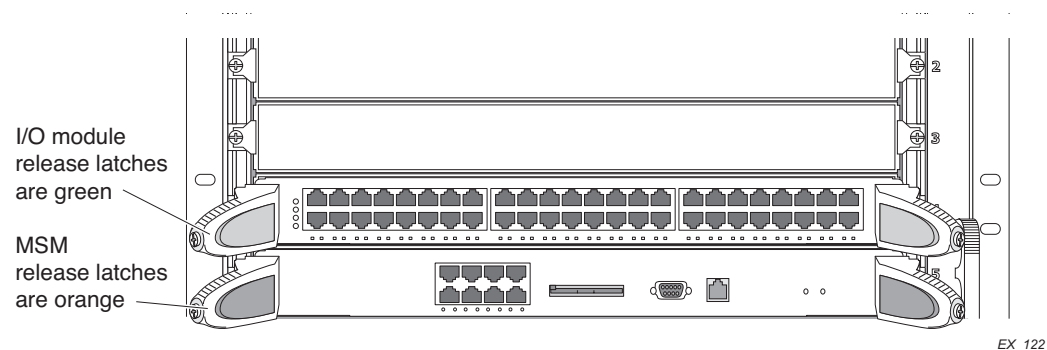
MSMs reside in different slots depending on which BlackDiamond switch you operate:

- If you are using only one MSM in the BlackDiamond 8806 switch, install that MSM in slot 3. If you add a second MSM to increase reliability and throughput, install the second MSM in slot 4.
- If you are using only one MSM in the BlackDiamond 8810 switch, install that MSM in slot 5. If you add a second MSM to increase reliability and throughput, install the second MSM in slot 6.

## Distinguishing an MSM from an I/O Module

One quick way to distinguish a BlackDiamond 8800 series MSM from an I/O module is by the color of the release latch on each injector/ejector handle. Orange injector/ejector release latches indicate that the module is a BlackDiamond MSM, and green injector/ejector release latches indicate that the module is a BlackDiamond I/O module (see [Figure 57](#)).

**Figure 57: Colors on Injector/Ejector Release Latches**



## Installing a BlackDiamond 8800 Series Module

You need the following tools and equipment to install a BlackDiamond 8800 MSM or I/O module:

- ESD-preventive wrist strap
- #2 Phillips screwdriver
- Appropriate type of cable for any ports on the module

**CAUTION**

The module series number must be the same as the switch series number. For example, install BlackDiamond 8800 modules only in a BlackDiamond 8800 series switch.

When you handle modules, optic devices, or other modular accessories, use an ESD-preventive wrist strap to reduce the risk of electronic damage to the equipment. Transport PC boards only in electrostatic packaging. Always place PC boards on a grounded surface before working on them.

To install a module in a BlackDiamond 8800 series switch:

- 1 Attach the ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle at the top left corner of the chassis.
- 2 Select a slot for the module. (See [“Module Slot Assignments”](#) on page 101.)



#### CAUTION

*MSMs and I/O modules only fit properly into their designated slots. Forceful insertion into the wrong slot type can damage the module.*

- 3 Remove a blank front panel from the chassis slot, if applicable.



#### NOTE

*Any unoccupied module slot in the chassis should have a blank faceplate installed to ensure satisfactory protection from EMI and to maintain adequate airflow through the chassis.*

- 4 Remove the module from the antistatic packaging as follows:
  - a Place the antistatic bag containing the module on a flat ESD-protective surface that is clear of any debris.
  - b Break the quality seal, the ESD warning seal, and the Read Installation Note seal.
  - c Open the antistatic bag and firmly grasp the rail of the module.
  - d Hold the rail of the module as you pull the antistatic bag off the module.



#### NOTE

*By holding the rail of the module and pulling the ESD bag off the module, you prevent damage to the module that might be caused by sliding the module on the ESD surface.*

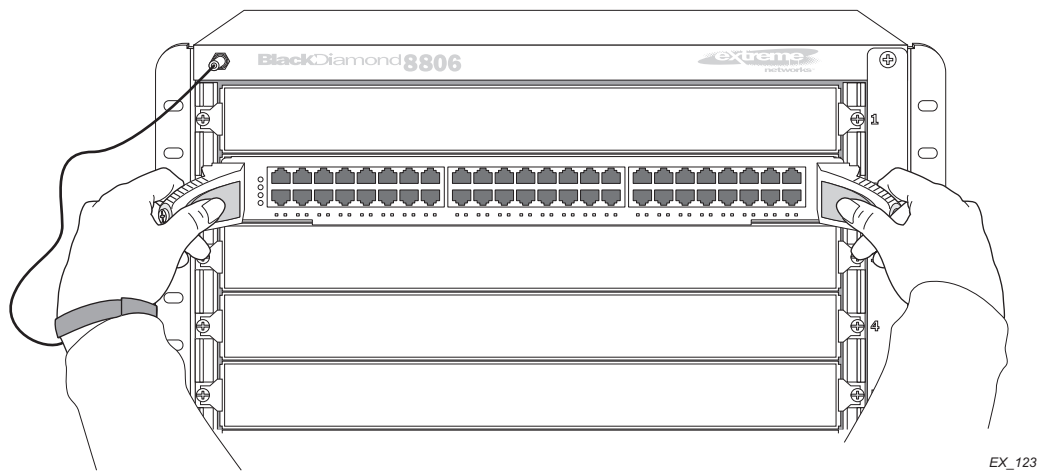
Store the module packaging for future use.



#### CAUTION

*To prevent ESD damage, hold the module by the metal rail and front panel only. Never touch the components on the PCB or the pins on any of the connectors.*

- 5 Verify that the module injector/ejector handles are open ([Figure 58](#)).

**Figure 58: Injector/ejector Handles in an Open Position**

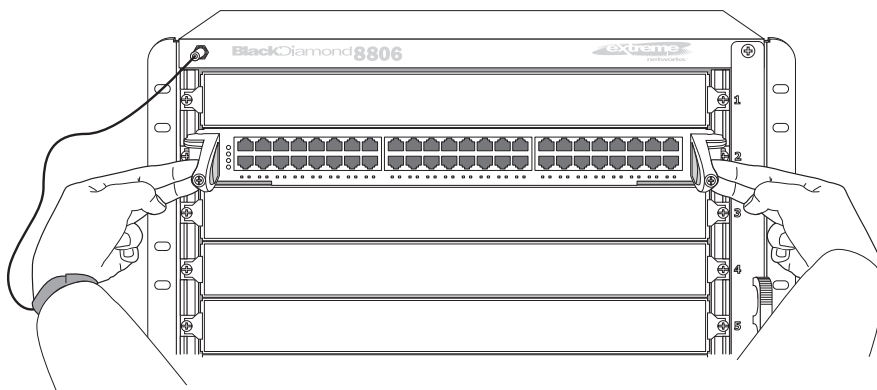
EX\_123

- 6 Keep the injector/ejector handles in the open position as you slide the module into the chassis slot.

**CAUTION**

*Do not slide the module into the open chassis slot if the injector/ejector handles are in the latched position.*

- 7 Use both hands to latch the injector/ejector handles, by simultaneously pushing both handles toward the center of the module, as shown in [Figure 59](#).

**Figure 59: Injector/ejector Handles in the Latched Position**

EX\_124

**CAUTION**

*There are two styles of ejector/injector handles on the BlackDiamond 8800 series modules. Pay careful attention to the instructions in the next step.*

- 8 Using a #2 Phillips screwdriver, lock the module into place in one of the following ways ([Figure 60](#)):



- If the captive screw on each handle has a yellow band around the head of the screw, turn the screw on each injector/ejector handle clockwise and *completely* down. When the screw is fully tightened, the yellow band around the captive screw is completely hidden.

**CAUTION**

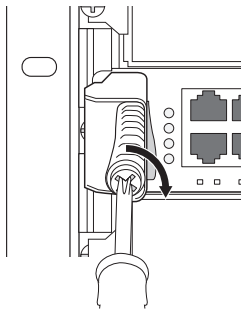
*Be careful to avoid over-torquing and stripping the screw heads.*

- If the captive screw on each handle has a red line on the head (see [Figure 61](#)), turn each captive screw one-quarter turn (90 degrees) clockwise. When the module is correctly locked, the red line on the captive screw in each injector/ejector handle is in a vertical position.

**CAUTION**

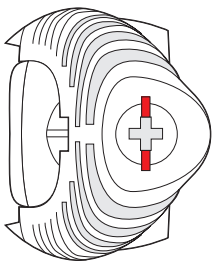
*Be sure to turn each captive screw only 90 degrees or one-quarter turn clockwise. Tightening the captive screws beyond 90 degrees will damage the injector/ejector handles on the modules.*

**Figure 60: Locking the Module into Place**



EX\_125

**Figure 61: Captive Screw with Red Line**



EX\_162

- 9 Store the module packaging for future use.

**NOTE**

*Leave the ESD-preventive wrist strap permanently connected to the chassis so that the strap is always available when you need to handle ESD-sensitive components.*

## Making Network Interface Cable Connections

Use the appropriate type of cable to connect the ports of your switch to another switch or router.

Working carefully, one port at a time:

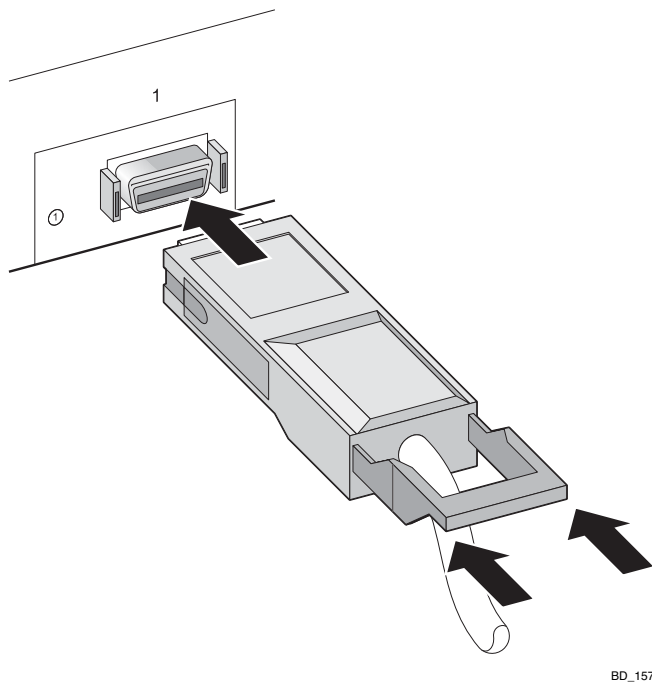
- 1 Verify that you have identified the correct cable for the port.
- 2 Use an alcohol wipe or other appropriate cleaning agent to clean the cable connectors; make sure they are free of dust, oil, and other contaminants.
- 3 If you are using optical fiber cable, align the transmit (Tx) and receive (Rx) connectors with the correct corresponding connectors on the switch or the I/O module.
- 4 Press the cable connectors into their mating connectors on the switch or I/O module until the cable connector is firmly seated.
- 5 Repeat steps 1 through 4 for the remaining cables on this or other switches or I/O modules.
- 6 Dress and secure the cable bundle to provide appropriate strain relief and protection against bends and kinks.

## Connecting and Disconnecting Cables on the 10G4Ca Module

The ports on the 10G4Ca I/O module use copper CX4 interface connectors. The cables that connect to these ports include a latch that mechanically stabilizes the connection. You must be sure to correctly engage the latch when you connect cables, and to correctly disengage the latch when you disconnect cables.

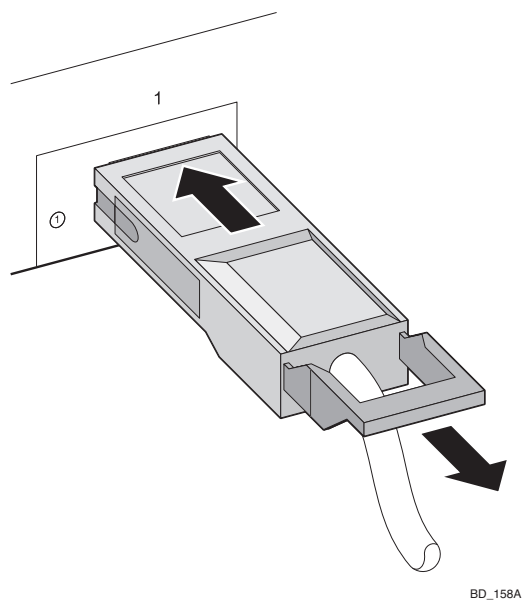
To connect cables to the 10G4Ca module:

- 1 Make sure that the connector latch is pulled back to the unlatched position.
- 2 Align the connector with the module port and push it into place until the connector is flush with the front panel of the module (Figure 62).
- 3 Evenly push the latch toward the module port to secure the connection (Figure 62). Make sure that the latch engages equally on both sides.

**Figure 62: Connecting a 10G4Ca Module Port**

To disconnect a cable from a 10G4Ca module:

- 1 Holding the cable connector with one hand, press it against the module front panel as you use the other hand to pull back evenly on the latch (Figure 63).

**Figure 63: Disconnecting a cable from a 10G4Ca port**

- 2 Make sure the latch is pulled into the fully disengaged position.
- 3 Pull the cable connector straight off the port connector.

## Installing a Backup MSM

If you install a backup MSM, use the `synchronize` command to replicate all saved images and configurations from the primary MSM to the backup MSM.

You are not prompted to synchronize the images and the configurations from the primary to the backup. If not synchronized, the backup uses its image and the primary configuration. This image/configuration mismatch will likely cause the switch to operate differently after failover.



### CAUTION

*Depending on the size and complexity of your network, you should install and configure a backup MSM when network disruption will be minimal. You may need to reboot your switch after you use the `synchronize` command.*

## Verifying the Module Installation

After you install a module, verify that it is working correctly by checking the LEDs on the front panel of the module. [Table 18](#) shows normal LED operation for correctly installed MSMs and I/O modules.

Use the command line interface (CLI) `show slot <slot number>` command to display slot-specific information about the newly installed module.

**Table 18: Module LED Activity for Normal Operation**

MSM		I/O Module	
LED	State/Meaning	LED	State/Meaning
SYS	Green blinking	STATUS	Green blinking
MSTR	Green: MSM is primary Amber: MSM is backup	DIAG	Off
ENV	Green	Port status (per port)	Green Amber blinking
Link/Activity	Green: Link is up. Amber: Packet activity is occurring.		

For more information about LED activity, see the module chapter for each switch series.

## Displaying Slot Status Information

Assuming the module has no problems, the command `show slot <slot>` (where `<slot>` is the number of the slot where you installed the module) displays information about the module including: general information about the module (name, serial number, part number), the state of the module (power down, operational, mismatch between the slot configuration and the module in the slot), and the number of ports on the module.

For more information about slot status information, see the *ExtremeXOS 12.1 Concepts Guide* and the *ExtremeXOS 12.1 Command Reference Guide*.

# Removing a BlackDiamond 8800 Series Module



## CAUTION

There are two styles of ejector/injector handles on the BlackDiamond 8800 series modules. Pay careful attention to the instructions in step 2.

This section describes how to remove modules from a BlackDiamond 8800 series switch. BlackDiamond modules are hot-swappable. You do not need to power the system off to remove a module.

You need the following tools and equipment to remove a BlackDiamond 8800 series module:

- ESD-preventive wrist strap
- #2 Phillips screwdriver
- Replacement module or blank faceplate if you are not replacing the module

To remove a BlackDiamond 8800 series module:

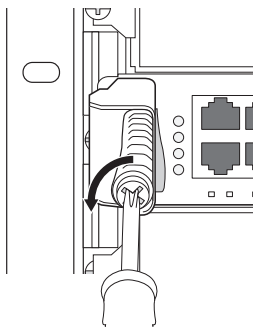
- 1 Attach the ESD-preventive wrist strap to your bare wrist. If it is not already connected, connect the metal end to the ground receptacle at the top left corner of the chassis.
- 2 Unlock the module in one of the following ways:
  - On a module *without* red lines on the screwheads, turn each captive screw counter-clockwise (Figure 64). Verify that the yellow band around the captive screw head of each injector/ejector handle is completely visible (Figure 64). This position ensures that the module is unlocked.
  - On a module *with* red lines on the screwheads, turn each captive screw counter-clockwise one-quarter turn (90 degrees) (Figure 64). Verify that the red line on each captive screw is in a horizontal position (Figure 65). This position ensures that the MSM or I/O module is unlocked.



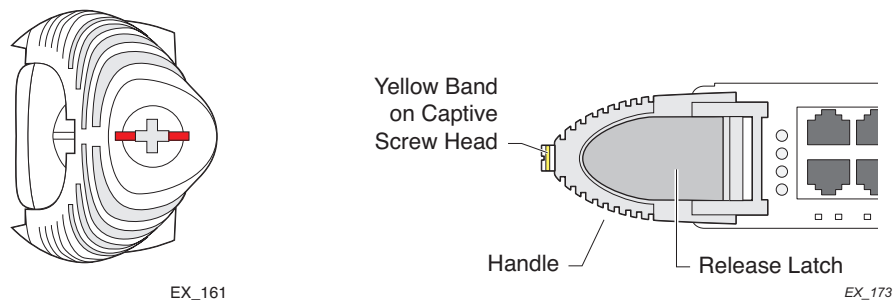
## CAUTION

Be sure to turn each captive screw only 90 degrees or one-quarter turn counter-clockwise. Loosening the captive screws beyond 90 degrees will damage the injector/ejector handles on the module.

**Figure 64: Unlocking a Module**



EX\_125a

**Figure 65: Indications that the Module is Unlocked**

- 3 Squeeze the release latch on each injector/ejector handle and rotate both handles outward to disconnect the module from the chassis backplane (see [Figure 65](#)).

**CAUTION**

*To prevent ESD damage, hold the module by the metal panel edges only. Never touch the components on the PCB or the pins on any of the connectors.*

- 4 Slide the module out of the chassis slot.
- 5 Immediately place the module into the anti-static bag to protect it from potential ESD damage. The bag will also prevent dust from collecting on the module connectors.
- 6 If you are not going to install a replacement module, install a blank front panel. To install a replacement module, follow the installation procedure starting [on page 102](#).

**NOTE**

*Leave the ESD-preventive wrist strap permanently connected to the chassis so that it is always available when you need to touch ESD-sensitive components.*

## Blank Front Panels

BlackDiamond switches are shipped with blank front panels installed over one or more chassis slots. You can remove or install a blank front panel at any time without disrupting network services. Complete the action of installing a blank front panel in a reasonable time-frame to avoid disruption to adequate airflow.

**CAUTION**

*All unoccupied slots in a BlackDiamond 8800 series switch must have blank front panels correctly installed to ensure conformance to FCC requirements as well as to maintain adequate airflow through the switch.*

You need the following tools and equipment to install or remove a blank front panel:

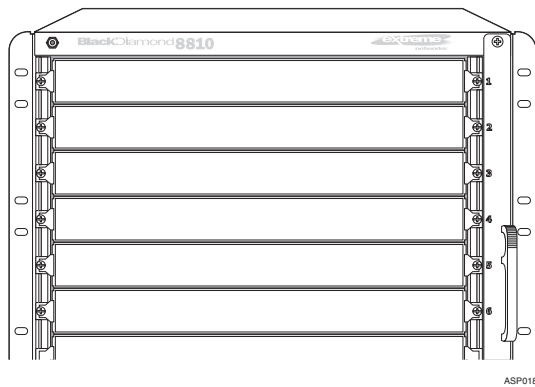
- ESD-preventive wrist strap
- #2 Phillips screwdriver

## Installing a Blank Front Panel

To install the blank front panel:

- 1 Attach the ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle at the top left corner of the BlackDiamond chassis.
- 2 Align the blank front panel over the open slot on the chassis (see [Figure 66](#)).  
Make sure that the EMI gasket is on the top of the panel and the stenciled part number is right side up.

**Figure 66: Blank Front Panels in a BlackDiamond 8800 Series Chassis**



- 3 Use a #2 Phillips screwdriver to tighten the captive screws at each end of the blank front panel.



### NOTE

*Tighten the screws of each installed blank front panel before inserting additional modules or blank front panels. Otherwise, you might unseat modules or blank front panels that you have not secured.*



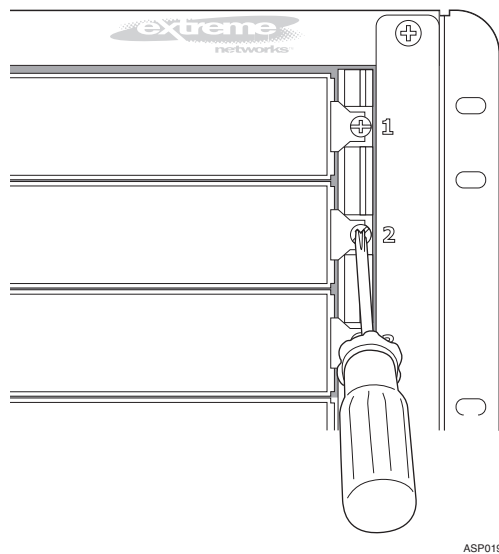
### NOTE

*Leave the ESD-preventive wrist strap permanently connected to the chassis so that it is always available when you need to touch ESD-sensitive components.*

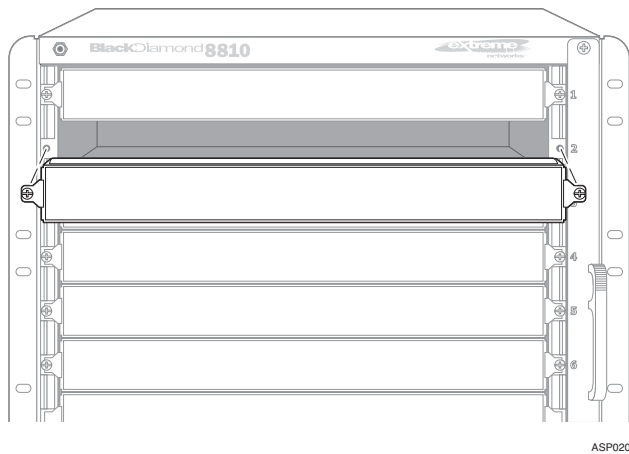
## Removing a Blank Front Panel

To remove a blank front panel:

- 1 Attach the ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle at the top left corner of the switch front panel.
- 2 Loosen the captive screw at each end of the blank front panel, using a #2 Phillips screwdriver (see [Figure 67](#)).

**Figure 67: Captive Screw on a BlackDiamond 8800 Series Blank Front Panel**

- 3 Remove the blank front panel from the front of the BlackDiamond switch (see [Figure 68](#)).

**Figure 68: Removing a Blank Front Panel from a BlackDiamond 8800 series Switch**

- 4 Install an I/O module or MSM in the open slot as described in [“Installing a BlackDiamond 8800 Series Module”](#) on page 102.

**NOTE**

*Leave the ESD-preventive wrist strap permanently connected to the switch, so that the strap is always available when you need to handle ESD-sensitive components.*



# Installing or Removing an External Compact Flash Memory Card

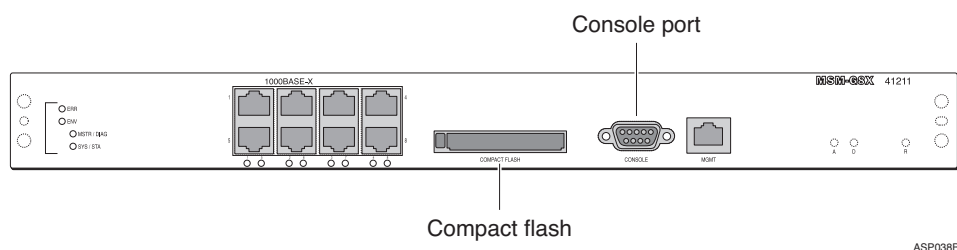
You do not need to power off the system or remove the MSM from the chassis to install or remove an external compact flash memory card.

You need an ESD-preventive wrist strap to install a compact flash memory card.

To install the memory card:

- 1 Attach the ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the chassis front panel.
- 2 Locate the compact flash slot on the MSM (see [Figure 69](#)).

**Figure 69: Typical Compact Flash Slot Location (BlackDiamond 8800 Series MSM)**



- 3 Hold the memory card between your thumb and forefinger.  
The side with the ridge faces toward the bottom of the chassis.
- 4 Slide the card into the compact flash slot until you feel resistance.; a portion of the card will protrude from the slot.
- 5 Carefully push the card until it is seated into the slot. The card should be fully inserted, or seated, inside the slot.
- 6 To verify that the card is fully seated, use the `show memorycard` command.

To remove the external compact flash memory card:

- 1 Use the `eject memorycard` command to ensure that you will not lose any data when you remove the card.

After you use the `eject memorycard` command, you can physically remove the card from the external compact flash slot on the MSM. For more information about the `eject memorycard` command, see the *ExtremeXOS 12.0 Concepts Guide*.

- 2 Attach the ESD-preventive wrist strap to your wrist and connect the metal end of the strap to the ground receptacle on the chassis front panel.
- 3 Locate the black release pin just above the compact flash slot.
- 4 Press the release pin until the card releases from the slot.  
The card releases to an intermediate position; the card remains partially inserted but is no longer seated in the slot.
- 5 Remove the card completely and place it in a safe location.

## Initial Management Access

After your switch has completed all power on self-tests, it is operational. You can log in and configure an IP address for the default VLAN (named *default*).

**NOTE**

*In BlackDiamond switches, the management port on the MSM is part of the management VLAN by default. Refer to “Management Ports” on page 16 for further details.*

## Connecting Equipment to the Console Port

Connection to the console port is used for direct local management. The console port settings are:

- Baud rate—9600
- Data bits—8
- Stop bit—1
- Parity—None
- Flow control—XON/XOFF

The terminal or PC with terminal-emulation software that you connect to an Extreme Networks switch must be configured with these settings. This procedure is described in the documentation supplied with the terminal.

Appropriate cables are available from your local supplier, or you can make your own. To ensure the electromagnetic compatibility of the unit, use only shielded serial cables. For information about the DB-9 console plug connector, see “Connector Pinouts” on page 173.

## Logging In for the First Time

To log in and manually configure the IP settings:

- 1 Connect a terminal or PC with terminal-emulation software to the MSM on the BlackDiamond switch or to the console port on the Summit switch.
- 2 At your terminal, press [Return] one or more times until you see the login prompt.
- 3 At the login prompt, enter the default user name *admin* to log on with administrator privileges. For example:

```
login: admin
```

Administrator capabilities allow you to access all switch functions.

- 4 The system will ask a series of questions about the default management settings, which allow all forms of management access for convenience in setting the initial configuration. Answer each question based on the level of security needed for the particular management access type.

**NOTE**

*For more information about logging in to the switch and configuring switch management access, see the ExtremeXOS 12.1 Concepts Guide.*

- 5 At the password prompt, press [Return].

The default user name *admin* has no password assigned to it. When you have successfully logged on to the system, the command line prompt displays the system name (for example, BlackDiamond12804>) in its prompt.

**NOTE**

---

*For more information about how to assign a specific system name, see the ExtremeXOS 12.1 Concepts Guide.*

- 6 Assign an IP address and subnetwork mask for VLAN *default* by typing:

```
configure vlan default ipaddress 123.45.67.8 255.255.255.0
```

Your changes take effect immediately.

- 7 Save your configuration changes so that they will be in effect after the next system reboot by typing:

```
save
```

The configuration is saved to the configuration database of the MSM modules in the switch.

**NOTE**

---

*For more information about saving configuration changes, see the ExtremeXOS 12.1 Concepts Guide.*

- 8 When you are finished with these tasks, log out of the switch by typing:

```
logout
```



---

**3**

## **Installing BlackDiamond Switch Accessories**

---



## 8

## Installing BlackDiamond 8800 Series Module Options

This chapter includes the following sections:

- [Installing an S-POE Daughter Card on page 119](#)
- [Installing an Option Card in the MSM-48c on page 122](#)

This chapter describes how to install the following optional components on BlackDiamond 8800 series modules:

- S-POE daughter card on the G48Tc or G48Te2 I/O module
- S-G8Xc or S-10G1Xc port option card in the MSM-48c module

### Installing an S-POE Daughter Card

The S-POE daughter card adds PoE functionality to the ports on a G48Tc or G48Te2 I/O module.

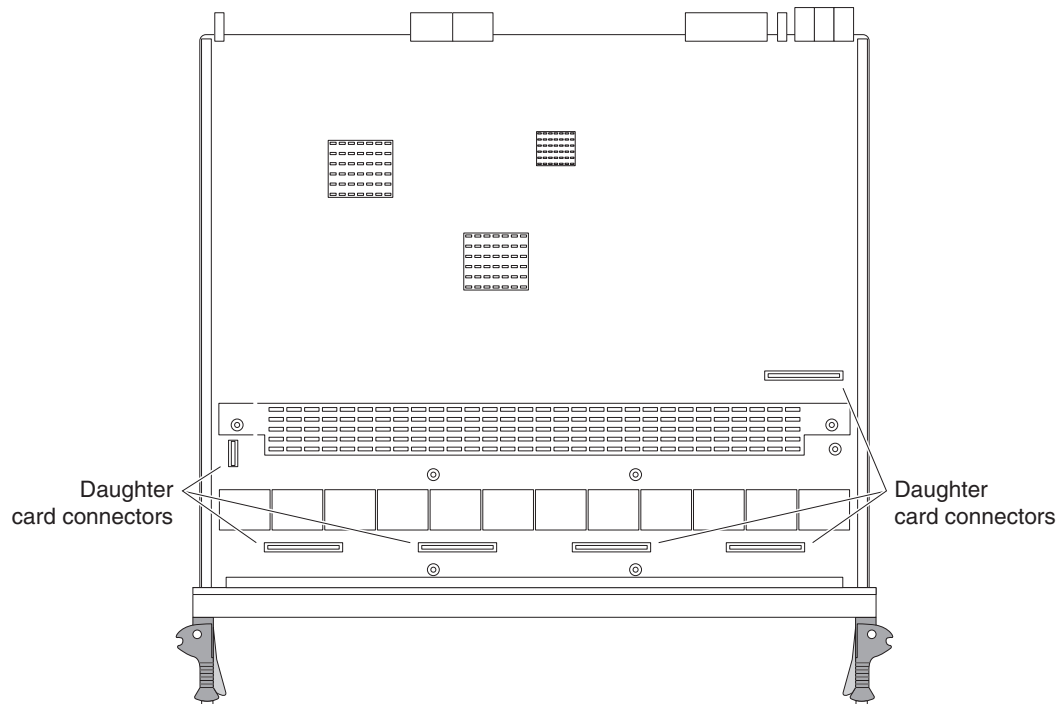
You must remove the I/O module from the BlackDiamond 8800 series switch before you install the S-POE card.

You need the following tools and equipment to install an S-POE card:

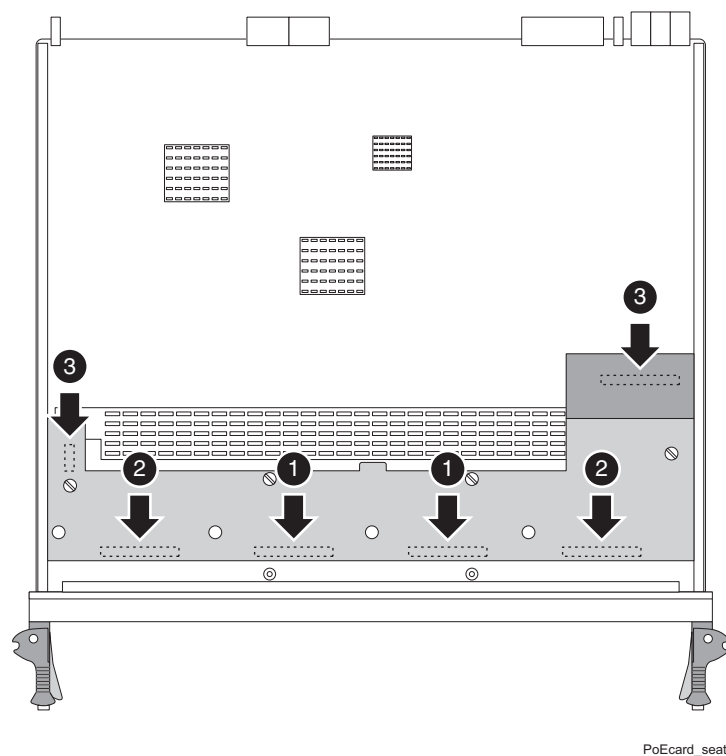
- ESD-preventive wrist strap
- #2 Phillips screwdriver
- 3/8-inch flat-blade screwdriver

To install the S-POE daughter card:

- 1 Attach the ESD-preventive wrist strap to your bare wrist. If the metal end is not already connected, connect it to the ground receptacle at the top left corner of the chassis.
- 2 Remove the I/O module from the BlackDiamond 8800 series switch, following the instructions in [“Removing a BlackDiamond 8800 Series Module” on page 109](#). Set the module on an ESD-preventive work surface.
- 3 Identify the daughter card connectors on the I/O module (see [Figure 70](#)).

**Figure 70: Daughter Card Connectors on the BlackDiamond G48Tc or G48Te2 I/O Module**

- 4 Remove the S-POE card from its anti-static packaging.
- 5 Align the S-POE card with the connectors on the I/O module (see [Figure 72](#)). Following the sequence indicated in [Figure 72](#), carefully press the connectors into place. Make sure that all the connectors seat securely.

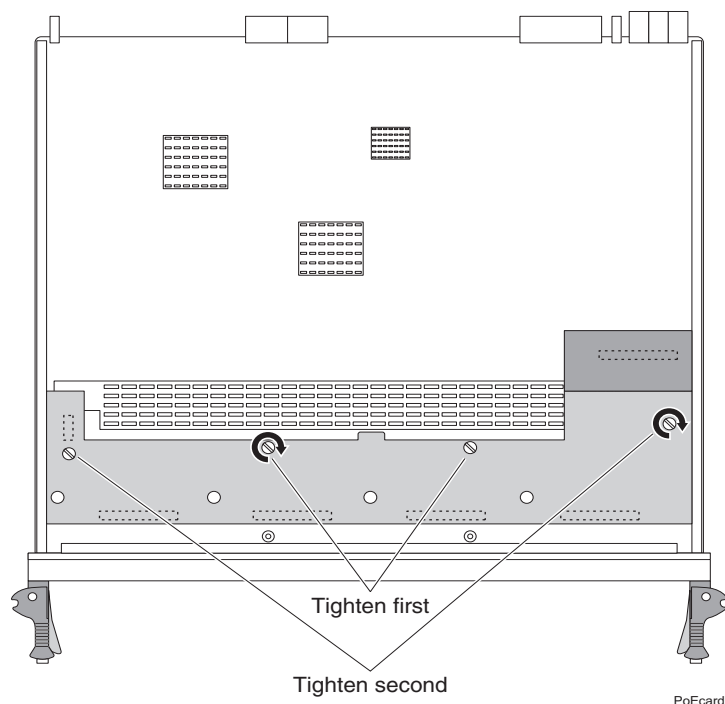
**Figure 71: Seating the S-POE Card on the I/O Module**

PoEcard\_seat



- 6 Align and finger-tighten the retaining screws, starting with the two middle screws (see [Figure 72](#))

**Figure 72: Securing the S-POE Card to the I/O Module**



- 7 Re-install the I/O module in the BlackDiamond 8800 series switch following the instructions in [“Installing a BlackDiamond 8800 Series Module”](#) on page 102.

## Removing an S-POE Card

To remove an S-POE card:

- 1 Attach the ESD-preventive wrist strap to your bare wrist. If the metal end is not already connected, connect it to the ground receptacle at the top left corner of the chassis.
- 2 Remove the I/O module from the BlackDiamond 8800 series chassis as described in [“Removing a BlackDiamond 8800 Series Module”](#) on page 109.
- 3 Loosen the spring-loaded captive retaining screws on the S-POE card until they pop up.  
If the retaining screws are too tight to loosen by hand, use a 3/8-inch flat-blade screwdriver.
- 4 At each end of the card, grasp the top and bottom edges and carefully lift the card to disengage the connectors.
- 5 Place the S-POE card on an ESD-preventive work surface or into anti-static packaging.
- 6 If you are replacing the S-POE card, install the replacement card as described in [“Installing an S-POE Daughter Card”](#) on page 119.
- 7 Re-install the I/O module as described in [“Installing a BlackDiamond 8800 Series Module”](#) on page 102.

## Installing an Option Card in the MSM-48c

The MSM-48c has a slot for one of the following option cards:

- S-G8Xc, which adds eight 1-gigabit SFP data ports to the MSM-48c
- S-10G1Xc, which adds one 10-gigabit XFP data port to the MSM-48c

You need the following tools and equipment to install an option card:

- ESD-preventive wrist strap
- #2 Phillips screwdriver
- #1 Phillips screwdriver
- 3/8-inch straight-tip screwdriver



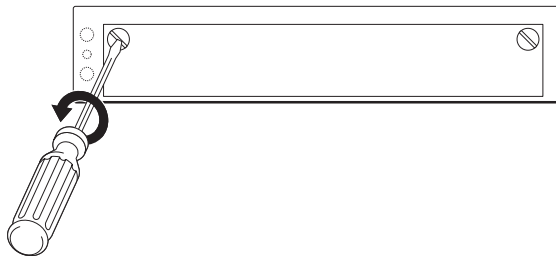
### CAUTION

*Option cards for the MSM-48c are not hot-pluggable. You must administratively disable the module and remove it from the switch before you install the option card*

To install an option card in the MSM-48c:

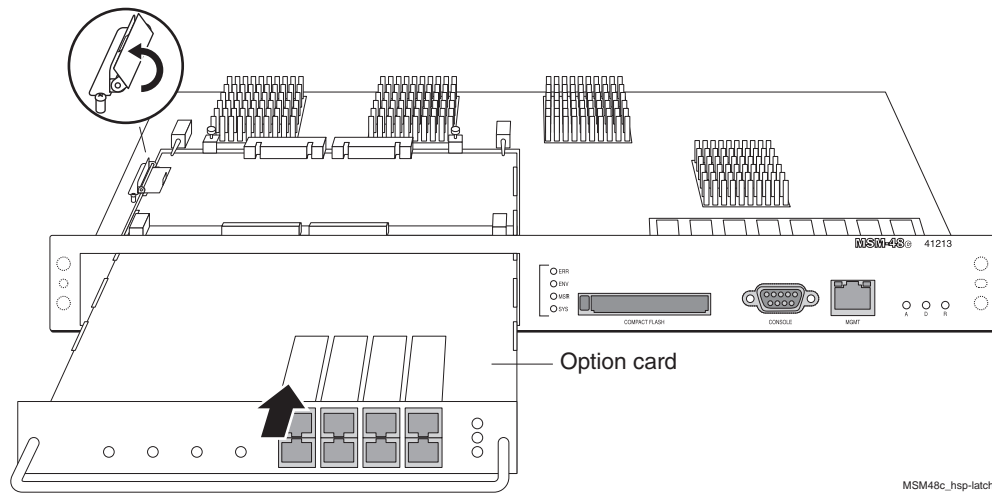
- 1 Attach the ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the top-left corner of the switch chassis.
- 2 Remove the MSM-48c from the switch as described in [“Removing a BlackDiamond 8800 Series Module” on page 109](#).
- 3 Loosen the retaining screws on the option slot cover plate ([Figure 73](#)) and remove the plate.

**Figure 73: Option Slot Cover Plate**

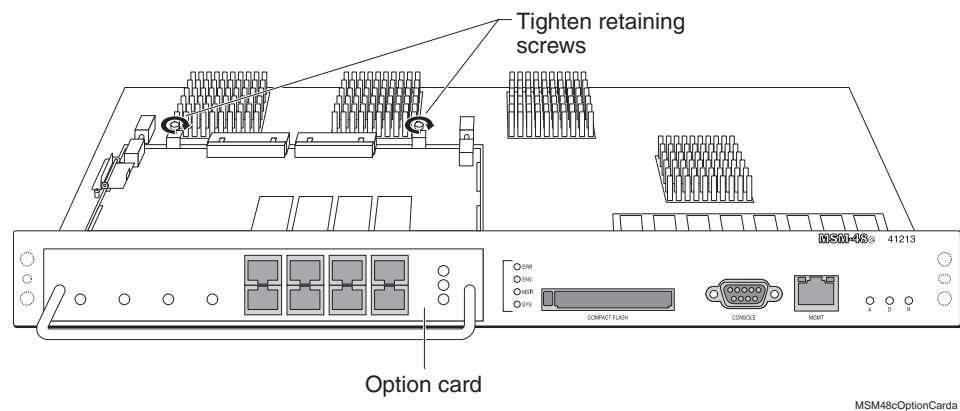


ASP\_051\_cover

- 4 Align the option card with the card guides on the module, and carefully slide the option card into the option slot.
- 5 At the edge of the module, rotate the hot-swap prevention latch up and hold it out of the way. Slide the option card the rest of the way into the slot ([Figure 74](#)).

**Figure 74: Inserting the Option Card**

- 6 Release the hot-swap prevention latch and verify that the option card has engaged the alignment pins and connector at the back of the card.
- 7 At the back of the option card, align and finger-tighten the captive retaining screws to secure the card in place ([Figure 75](#)).

**Figure 75: Securing the Option Card**

- 8 Re-install the MSM-48c, following the instructions in [“Installing a BlackDiamond 8800 Series Module” on page 102](#).

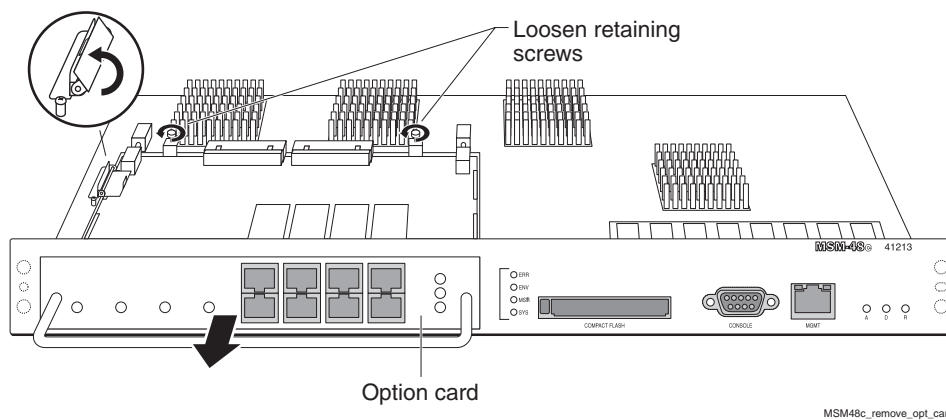
Leave the ESD-preventive wrist strap permanently connected to the switch so that it is always available when you need to touch ESD-sensitive components.

## Removing an MSM Option Card

To remove an option card from an MSM-48c module:

- 1 Attach an ESD-preventive wrist strap to your bare wrist. If the metal end is not already connected, connect it to the ground receptacle at the top left corner of the chassis.
- 2 Remove the MSM from the BlackDiamond 8800 series switch as described in [“Removing a BlackDiamond 8800 Series Module”](#) on page 109.
- 3 At the back of the option card, loosen the spring-loaded captive retaining screws until they pop up (see [Figure 76](#)).
- 4 At the edge of the module, rotate the hot-swap prevention latch up and hold it out of the way.

**Figure 76: Removing an Option Card**



- 5 Using the handle on the option card, pull straight back from the MSM to disconnect the option card from the connectors on the MSM.
- 6 Slide the option card out of the MSM and immediately place it into anti-static packaging.
- 7 If you are installing a replacement option card, install the option card as described in [“Installing an Option Card in the MSM-48c”](#) on page 122.  
If you are not installing a replacement option card, install the option slot cover plate over the option card slot.
- 8 Re-install the MSM, as described in [“Installing a BlackDiamond 8800 Series Module”](#) on page 102.

## 9 BlackDiamond AC Power Cord Retaining Brackets

The AC power cord retaining brackets for BlackDiamond switches hold the power connectors in the power sockets and prevent accidental disconnection due to earthquakes, vibration, or other disturbances. Power cord retaining brackets are provided with the BlackDiamond 8800 series switches.

This chapter includes the following sections:

- [BlackDiamond 8810 AC Power Cord Retaining Bracket on page 125](#)
- [BlackDiamond 8806 AC Power Cord Retainer Channel on page 128](#)



### WARNING!

*These BlackDiamond switches do not have a switch for turning the power of the unit on and off. Power to the switch is disconnected by removing the wall plug from the electrical outlet. Always be sure that all plugs and electrical outlets are easily accessible.*

## BlackDiamond 8810 AC Power Cord Retaining Bracket

Connect all AC power cords before you install the power cord retaining bracket.

You need the following tools and equipment to install or remove the AC power cord retaining bracket:

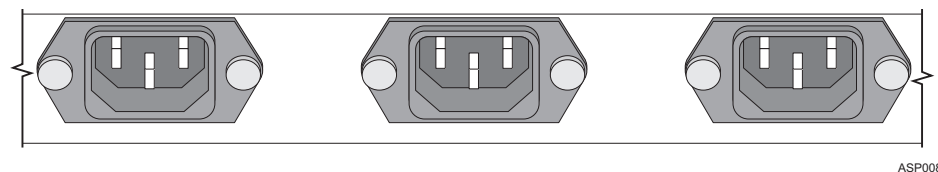
- ESD-preventive wrist strap
- #2 Phillips screwdriver

## Installing the BlackDiamond 8810 AC Power Cord Retaining Bracket

To install the BlackDiamond 8810 AC power cord retaining bracket:

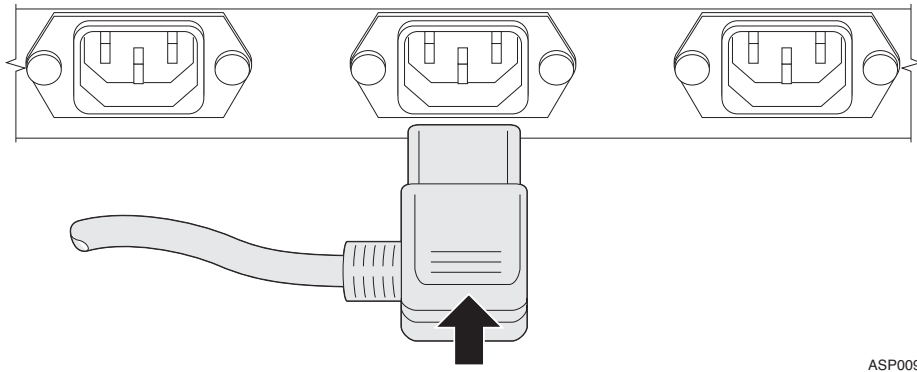
- 1 Attach the ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the top-left corner of the BlackDiamond 8810 chassis.
- 2 Locate the power outlets on the front of the BlackDiamond 8810 switch (see [Figure 77](#)).

**Figure 77: Power Outlets on the BlackDiamond 8810 Switch**



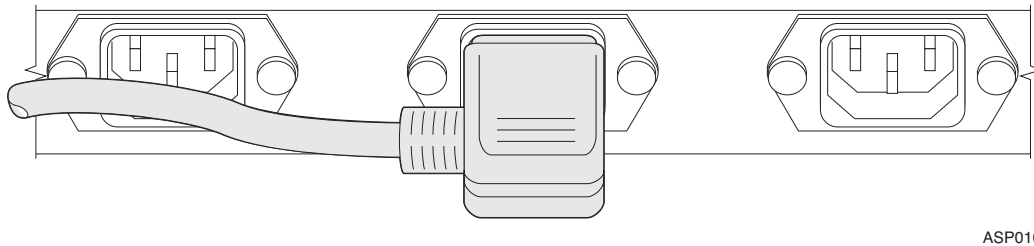
- 3 Connect each AC power cord to a power outlet on the BlackDiamond 8810 switch as shown in [Figure 78](#).

**Figure 78: Connecting an AC Power Cord to the BlackDiamond 8810 Switch**



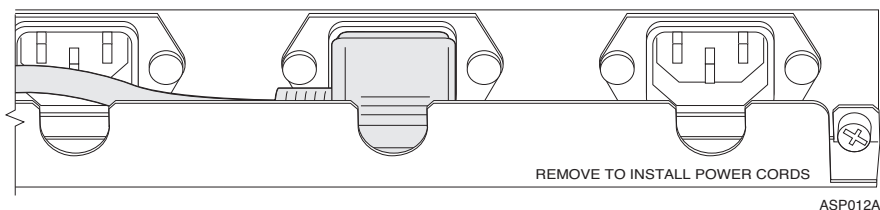
- 4 Make sure that each AC power cord is firmly plugged into the power outlet as shown in [Figure 79](#).

**Figure 79: AC Power Cord Plugged into the BlackDiamond 8810 Switch Power Outlet**



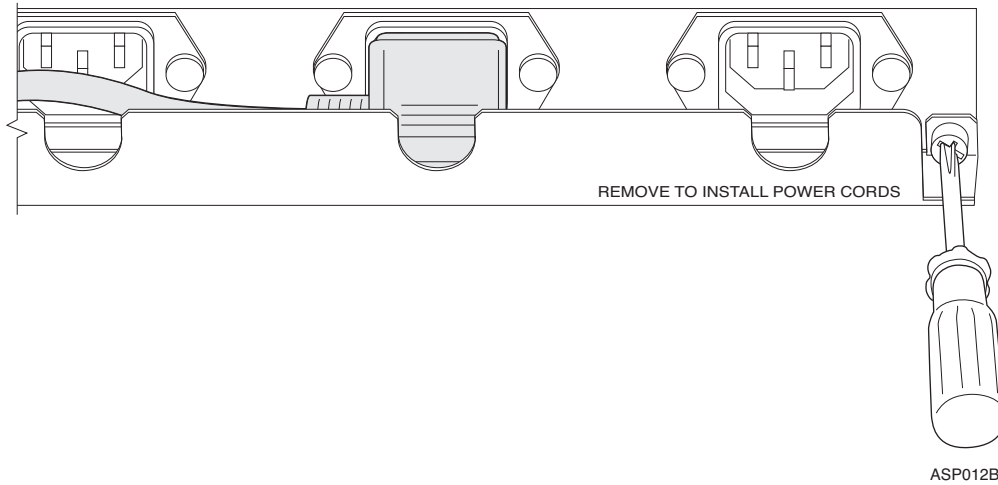
- 5 Align the BlackDiamond 8810 AC power cord retaining bracket over the AC power cord ends as shown in [Figure 80](#).

**Figure 80: AC Power Cord Retaining Bracket Correctly Aligned**



- 6 Tighten the captive screws in the middle and on each end of the power cord retaining bracket (see Figure 81).

**Figure 81: Securing the BlackDiamond 8810 AC Power Cord Retaining Bracket**



- 7 To power the system on, connect the other end of each installed AC power cord to the power source.



#### NOTE

Leave the ESD-preventive wrist strap permanently connected to the switch so that it is always available when you need to touch ESD-sensitive components.

## Disconnecting a BlackDiamond 8810 AC Power Cord

To disconnect a BlackDiamond 8810 AC power cord:

- 1 Attach the ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the top left corner of the switch chassis.
- 2 Disconnect the AC power cord from the power source.
- 3 Loosen the captive screws in the middle and on each end of the BlackDiamond AC power cord retaining bracket, using a #2 Phillips screwdriver.
- 4 Remove the BlackDiamond AC power cord retaining bracket from the front of the switch.
- 5 Remove the end of the AC power cord from the power outlet(s) on the front of the switch.



#### NOTE

Leave the ESD-preventive wrist strap permanently connected to the switch so that it is always available when you need to touch ESD-sensitive components.

## BlackDiamond 8806 AC Power Cord Retainer Channel

Connect all AC power cords before you install the power cord retaining bracket.

You need the following tools and equipment before installing or removing the BlackDiamond 8806 AC power cord retainer channel:

- ESD-preventive wrist strap
- #2 Phillips screwdriver

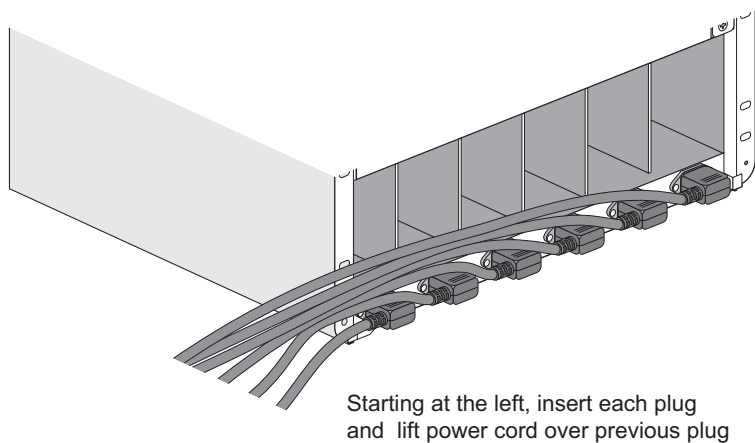
### Installing the BlackDiamond 8806 AC Power Cord Retainer Channel

To install the BlackDiamond 8806 AC power cord retainer channel:

- 1 Attach the ESD-preventive wrist strap to your wrist and connect the metal end to the ground receptacle on the top-left corner of the switch front panel.
- 2 Starting at the left, insert the plug of each AC power cord into the power connectors on the switch, and lift each installed power cord over the previous plug (see [Figure 82](#)).

Verify that all installed AC power cords are firmly plugged into the power connectors.

**Figure 82: Installing and Routing the AC Power Cords**

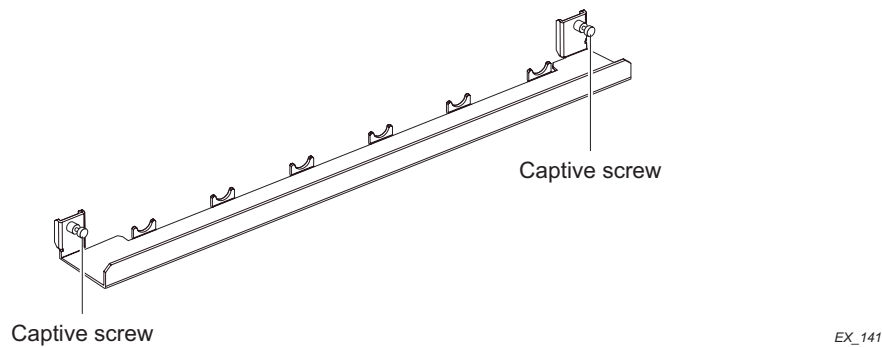


EX\_138



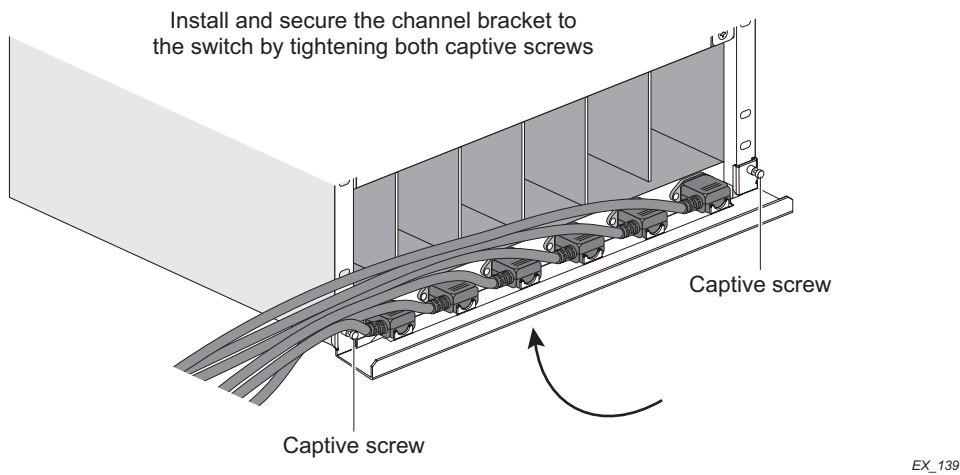
- 3 Hold the AC power cord retainer channel as shown in [Figure 83](#).

**Figure 83: BlackDiamond 8806 AC Power Cord Retainer Channel**

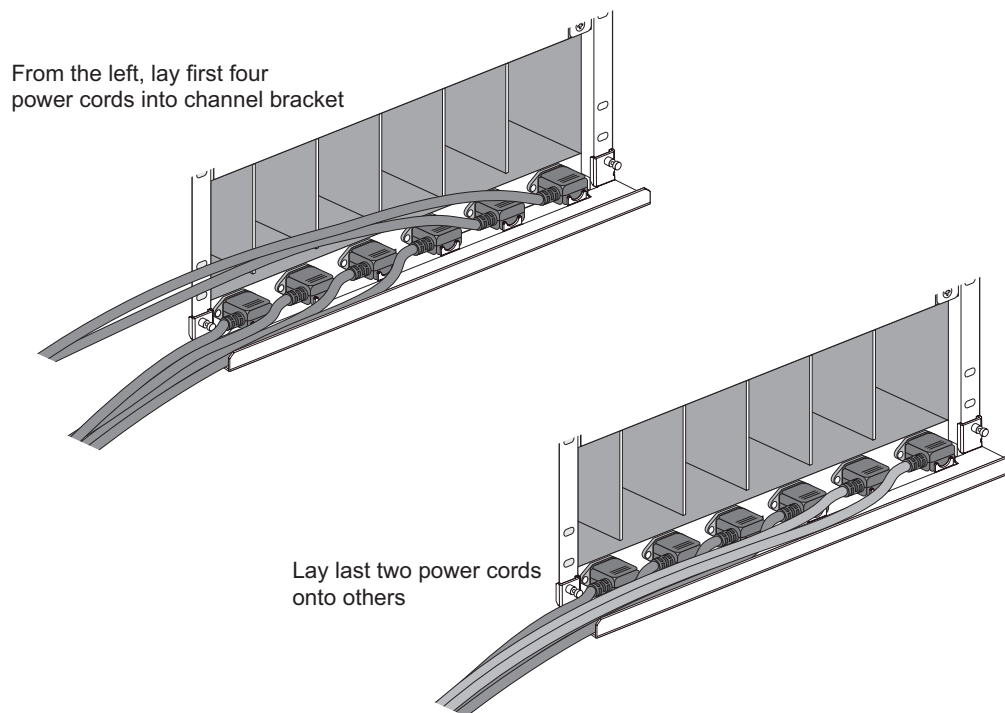


- 4 Place the retainer channel against the switch as shown in [Figure 84](#). Tighten the captive screw at each end of the channel.

**Figure 84: Securing the BlackDiamond 8806 AC Power Cord Retainer Channel**



- 5 Starting from the left, lay the first four power cords into the channel (see [Figure 85](#)).
- 6 Lay the last two power cords on top of the bottom four cords (see [Figure 85](#)).

**Figure 85: Routing the Power Cords in the Channel****NOTE**

*Leave the ESD-preventive wrist strap permanently connected to the switch, so that the strap is always available when you need to handle ESD-sensitive components.*

## Removing the BlackDiamond 8806 AC Power Cord Retainer Channel

To remove the BlackDiamond 8806 AC power cord retainer channel:

- 1 Attach the ESD-preventive wrist strap to your wrist and connect the metal end to the ground receptacle on the top-left corner of the switch front panel.
- 2 Using a #2 Phillips screwdriver, loosen the captive screw located on each end of the AC power cord retainer channel.
- 3 Remove the retainer channel from the switch.

**NOTE**

*Leave the ESD-preventive wrist strap permanently connected to the switch, so that the strap is always available when you need to handle ESD-sensitive components.*

This chapter includes the following sections:

- [About BlackDiamond Cable Management on page 131](#)
- [Using the Cable Holders and Cable Clips on page 131](#)

The BlackDiamond cable holders and cable clips provide a way to organize and contain masses of cables connected to a BlackDiamond switch. This chapter describes how to install and use these cable management accessories.

## About BlackDiamond Cable Management

Interlocking cable holders and cable clips for the BlackDiamond switches provide free-standing, rigid structural support for individual cables and cable bundles in front of the switch. You can use the cable holders and cable clips individually or connect them together to manage multiple cable bundles.

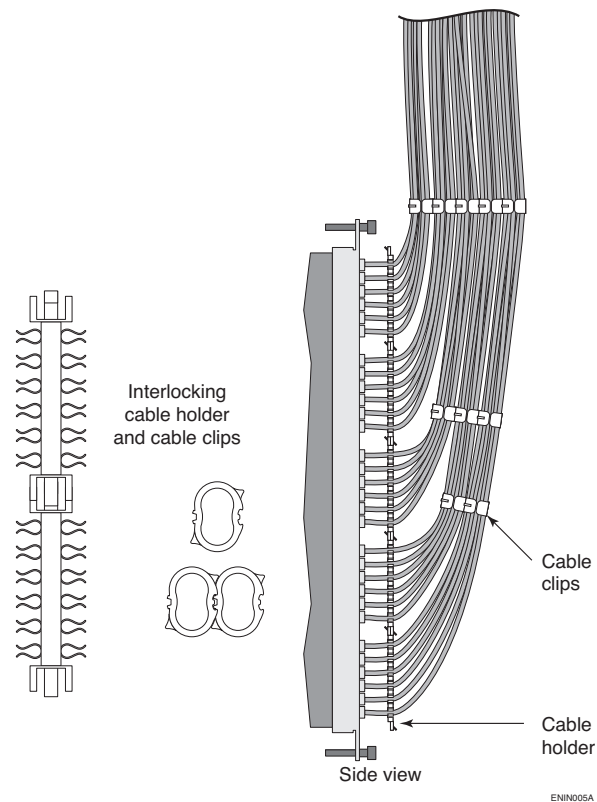
The cable management accessories keep cables collected in one place, rather than allowing them to hang freely. If you must remove a module from the chassis for replacement or repair, the cable clips and holders maintain the cable arrangement in front of the chassis for ease of connection when you reinsert the module.

## Using the Cable Holders and Cable Clips

When you use the cable holders and the cable clips, Extreme Networks recommends the following:

- Attach the cables to the holders by slipping the cable through the opening.
- Connect the cable holders, if you need more than one. (Refer to [“Connecting Cable Holders” on page 132.](#))
- If you need more than one cable clip for a bundle, connect the clips together before you route the cables through the clips. (Refer to [“Connecting Cable Clips” on page 133.](#))
- To form a cable bundle, thread the cables through the clips.

[Figure 86](#) shows the cable holders and clips being used to manage a group of cables.

**Figure 86: BlackDiamond cable holders and clips**

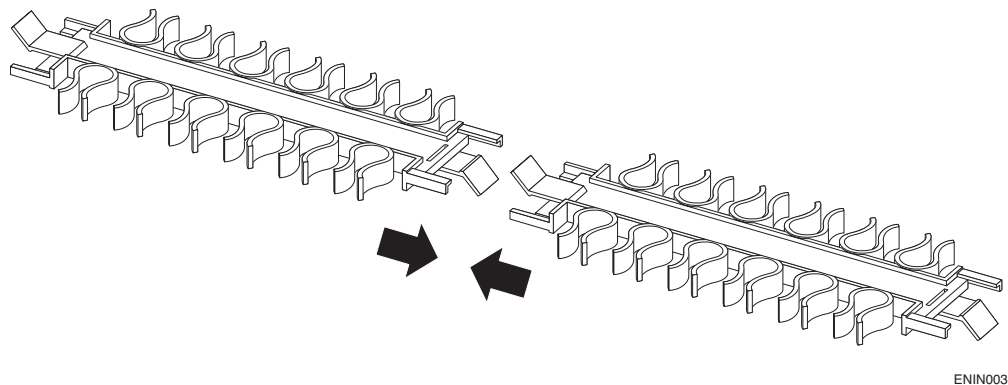
## Connecting Cable Holders

Each cable holder holds up to 12 separate cables, with 6 on each side. Connect cable holders end to end as needed to accommodate the number of cables you need to organize.

To connect the cable holders:

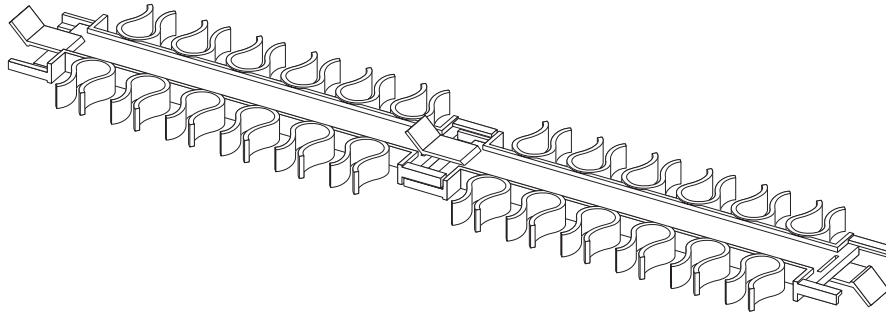
- 1 Hold two cable holders as shown in [Figure 87](#).

Make sure that one locking tab at the joint is on top and the other is on the bottom.

**Figure 87: Connecting cable holders**

- Slide the ends together and push the cable holders together until you feel them snap into place (see [Figure 88](#)).

**Figure 88: Connected cable holders**



ENIN004

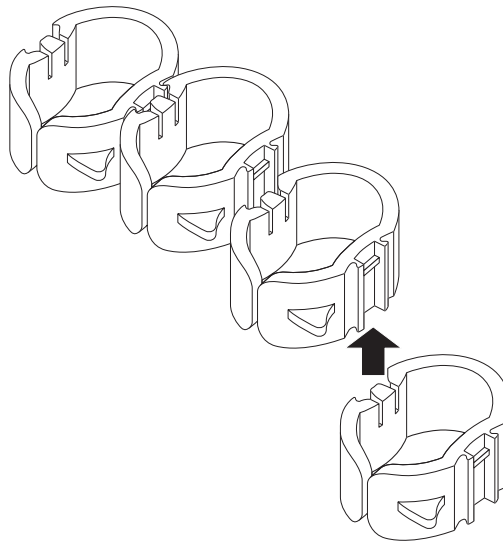
- Connect as many cable holders together as you need to manage your cable bundles.
- To disconnect the holders, grasp one in each hand firmly and carefully pull them apart.

## Connecting Cable Clips

To connect the cable clips:

- Hold two clips next to each other with the split sides facing the same way (see [Figure 89](#)).
- Slide the connecting grooves together (see [Figure 89](#)).

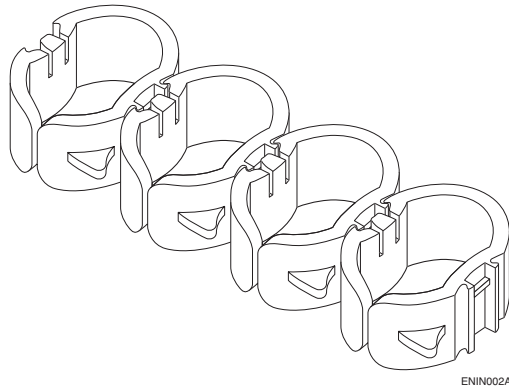
**Figure 89: Connecting cable clips**



ENIN001A

- 3 Press the clips together until the connectors lock into place (see [Figure 90](#)).

**Figure 90: Cable clip chain**



- 4 Connect as many cable clips together as you need to manage your cable bundles.
- 5 To disconnect the cable clips, push on the bottom ring while holding the top ring steady.







# 11

## Replacing BlackDiamond 8800 Series Chassis Components

This chapter provides instructions for replacing components in the BlackDiamond 8800 series switches and includes the following sections:

- [Replacing the Fan Tray on page 137](#)
- [Replacing the PSU/Fan Controller on page 140](#)

This chapter describes how to remove and replace a fan tray or a PSU/fan controller in the following BlackDiamond switches:

- BlackDiamond 8810 switch
- BlackDiamond 8806 switch

### Replacing the Fan Tray

The BlackDiamond 12804 switch has one fan tray that is accessible from the front of the switch.



#### NOTE

*To avoid long periods of operation without forced air cooling, make sure you have the replacement fan tray ready before you start the replacement procedure.*

### Pre-Installation Requirements

You need the following tools and equipment to remove and replace a fan tray in a BlackDiamond 8800 series switch:

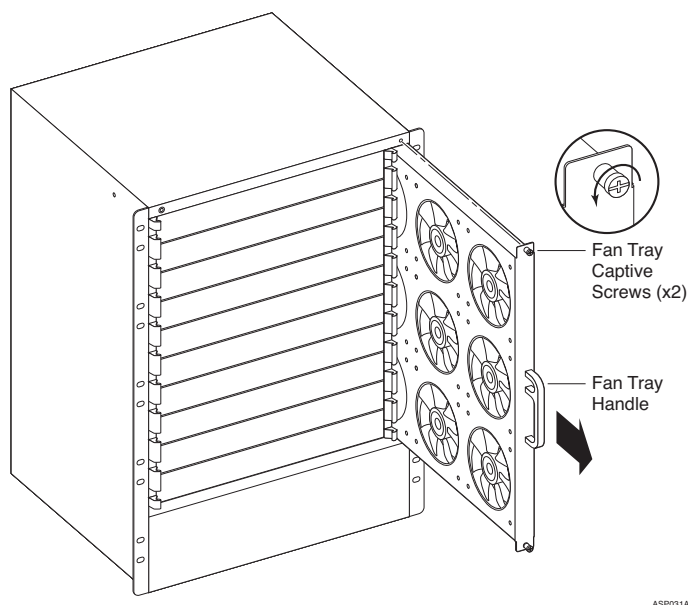
- ESD-preventive wrist strap
- #2 Phillips screwdriver
- Replacement BlackDiamond 8800 series fan tray

### Removing the Fan Tray

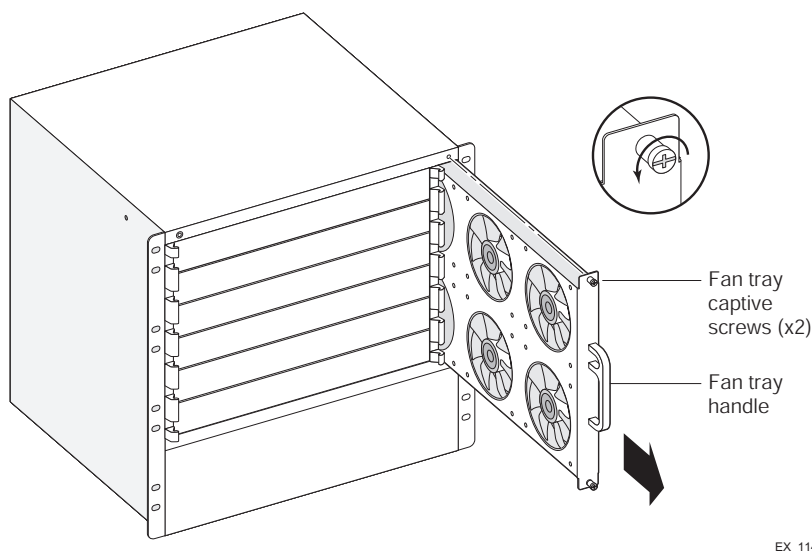
To remove a fan tray from the BlackDiamond 8800 series switch:

- 1 Attach the ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the top left corner of the switch chassis.
- 2 Locate the captive screws at the top and bottom of the fan tray.
- 3 Using a #2 Phillips screwdriver, loosen each captive screw (see [Figure 91](#) and [Figure 92](#)).

**Figure 91: Removing the Fan Tray from the BlackDiamond 8810 Switch**



**Figure 92: Removing the Fan Tray from the BlackDiamond 8806 Switch**



- 4 Use the fan tray handle to pull the fan tray half-way out from the fan tray slot. This action disconnects the fan tray from the switch power.

Wait for the fan blades to stop turning before continuing with this procedure.



**WARNING!**

*Be sure that all fan blade motion has ceased before continuing to remove the fan tray.*

- 5 Support the bottom of the fan tray with your free hand as you use the handle to slide the fan tray completely out from the fan tray slot.

**CAUTION**

*Be sure that both hands are used to support the weight of the fan tray during removal.*

**NOTE**

*Leave the ESD-preventive wrist strap permanently connected to the switch so that it is always available when you need to touch ESD-sensitive components.*

## Installing the Replacement BlackDiamond 8800 Series Fan Tray

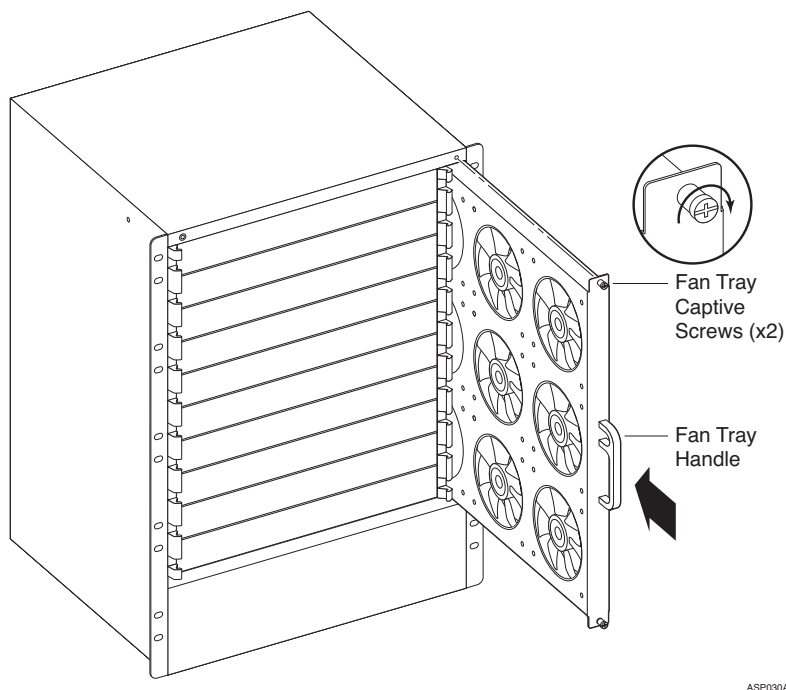
To install a replacement fan tray into the BlackDiamond 8800 series switch:

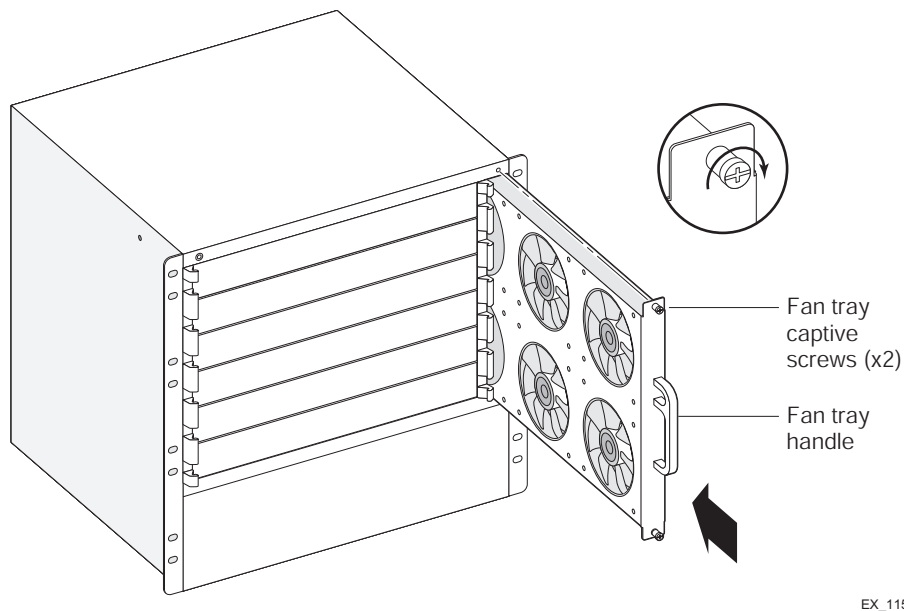
- 1 Attach the ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the top left corner of the switch.
- 2 Support the bottom of the fan tray with one hand as you lift the fan tray by the handle using the other hand. Align the spare fan tray with the fan tray slot on the switch, and then slide the fan tray into place in the switch (see [Figure 93](#) and [Figure 94](#)).

**CAUTION**

*Always use both hands to support the weight of the fan tray during installation.*

**Figure 93: Installing the Fan Tray in the BlackDiamond 8810 Switch**



**Figure 94: Installing the Fan Tray in the BlackDiamond 8806 Switch**

3 Use a #2 Phillips screwdriver to tighten the screws (Figure 93).

Leave the ESD-preventive wrist strap permanently connected to the switch so that it is always available when you need to touch ESD-sensitive components.

## Replacing the PSU/Fan Controller

The BlackDiamond 8800 series switch has two PSU/fan controllers behind an access panel on the rear of the switch chassis.



### NOTE

*If your system is running ExtremeXOS version 11.2.1.3 or later, you can hot swap the PSU/fan controller unit. Refer to the ExtremeXOS 12.1 Concepts Guide for complete information about upgrading software.*

## Pre-installation Requirements

Make sure that you have access to the back of the switch. You need the following tools and equipment to replace a BlackDiamond 12804 PSU/fan controller:

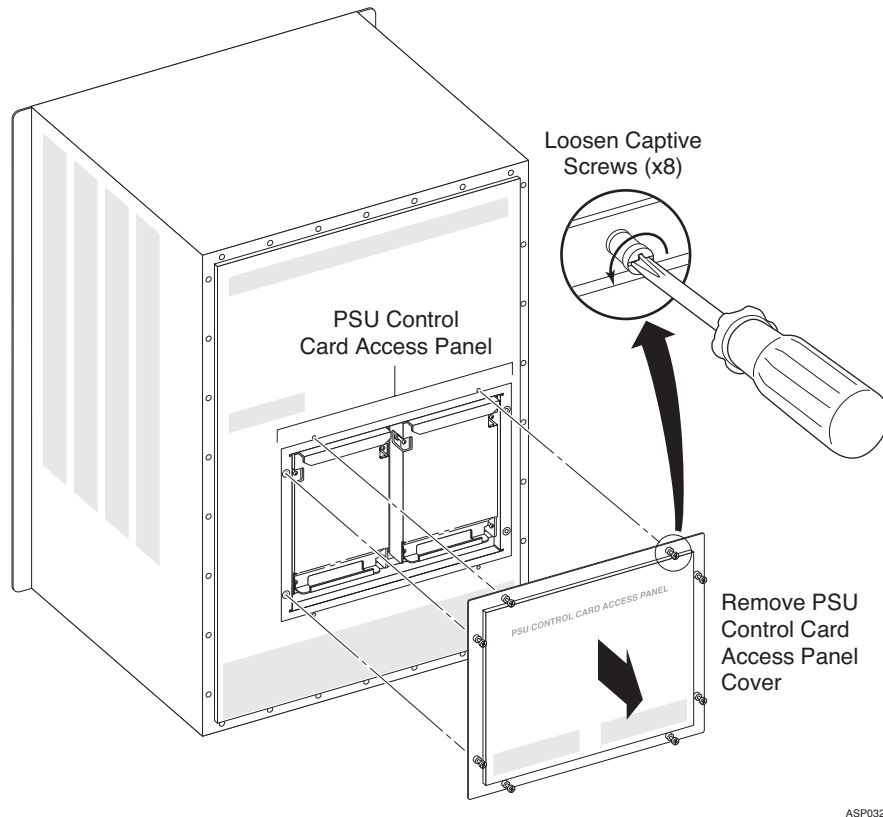
- ESD-preventive wrist strap
- #1 Phillips screwdriver
- #2 Phillips screwdriver
- Replacement BlackDiamond 8800 series PSU/fan controller

## Removing the PSU/Fan Controller

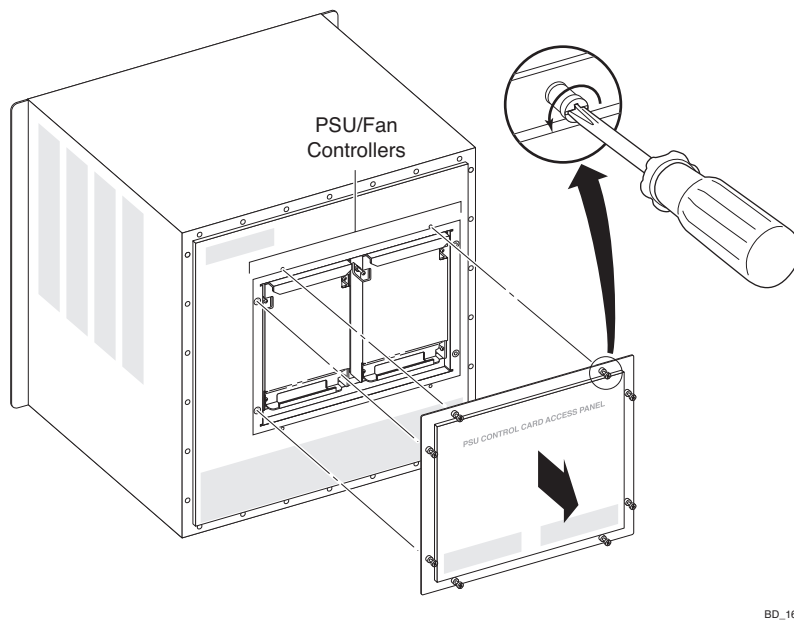
To remove a PSU/fan controller from the BlackDiamond 8800 series switch:

- 1 Attach the ESD-preventive wrist strap to your wrist and connect the metal end to the ground receptacle on the front top-left corner of the switch.
- 2 Locate the eight captive screws on the PSU/fan controller access cover at the back of the BlackDiamond 8800 series switch (see [Figure 95](#) and [Figure 96](#)).

**Figure 95: Removing the Access Cover from the BlackDiamond 8810 Switch**

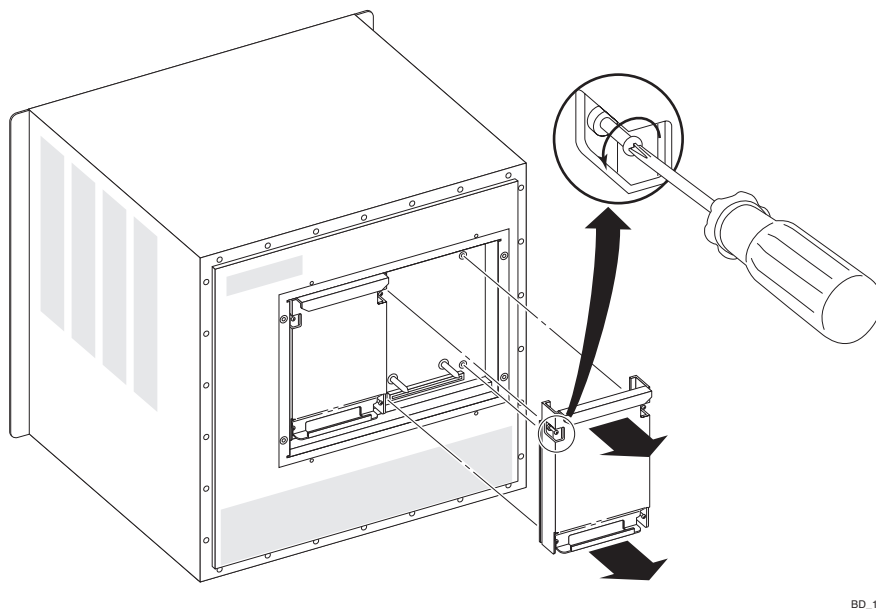


**Figure 96: Removing the Access Cover from the BlackDiamond 8806 Switch**



- 3 Using a #2 Phillips screwdriver, loosen all eight captive screws on the PSU/fan controller access cover.
- 4 Pull the access cover away from the back of the switch.  
The PSU/fan controllers are visible in the controller recess.
- 5 Locate the four captive screws on the PSU/fan controller you are replacing (see [Figure 97](#))

**Figure 97: Removing the PSU/Fan Controller (BlackDiamond 8806 Switch shown)**



- 6 Using a #1 Phillips screwdriver, loosen all four captive screws on the PSU/fan controller.
- 7 Pull equally on the upper and lower handles of the PSU/fan controller to disconnect the controller connector.

Leave the ESD-preventive wrist strap permanently connected to the switch, so that the strap is always available when you need to handle ESD-sensitive components.

## Installing the Replacement PSU/Fan Controller

To install a replacement PSU/fan controller in the BlackDiamond 12804 switch:

- 1 Attach the ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the front top-left corner of the switch.
- 2 Align the guide pins in the empty controller recess with the holes on the replacement PSU/fan controller.
- 3 Push the replacement PSU/fan controller into the empty controller recess until the four captive screws on the replacement controller are in alignment.
- 4 Using a #1 Phillips screwdriver, tighten all four captive screws on the replacement controller.
- 5 Align the guide pins on the access cover with the holes at the edges of the controller recess.
- 6 Push the access cover over the controller recess until the captive screws on the access cover are in alignment.
- 7 Using a #2 Phillips screwdriver, tighten all the captive screws on the access cover.

Leave the ESD-preventive wrist strap permanently connected to the switch, so that the strap is always available when you need to handle ESD-sensitive components.





## 12 Repacking a BlackDiamond 8800 Series Chassis

This chapter includes the following sections:

- [Safety Information on page 145](#)
- [Repacking the BlackDiamond 8810 Chassis on page 146](#)
- [Repacking the BlackDiamond 8806 Chassis on page 150](#)

The chapter describes how to remove a BlackDiamond 8800 series chassis from an equipment rack and repack the chassis for shipping back to Extreme Networks. To repack a BlackDiamond 8800 series chassis, use the original shipping crate or box and packing materials.



### NOTE

*Read the information in this chapter thoroughly before you attempt to remove a BlackDiamond 8800 series chassis.*

## Safety Information



### CAUTION

*Correct lifting procedures for a BlackDiamond chassis require two or more people.*

Only trained service personnel should perform service to Extreme Networks switches and their components. Trained service personnel have read all related installation manuals, have the technical training and experience necessary to be aware of the hazards to which they are exposed in performing a task, and are aware of measures to minimize the danger to themselves or other persons.



### NOTE

See [Appendix A, "Safety Information"](#) for additional safety information and [Appendix B, "Technical Specifications"](#) for additional information regarding regulatory compliance certifications.



### CAUTION

*Before you lift a BlackDiamond 8800 series chassis, make sure the chassis is empty to prevent unnecessary weight. This will also prevent damage to the system components due to possible system chassis flex when lifting.*

## Required Tools and Equipment

You need the following tools and equipment to repack a BlackDiamond 8800 series chassis:

- ESD-preventive wrist strap
- Helper bracket that was shipped with the chassis

- Four rack-mount screws appropriate to your organization's equipment rack
- Screwdriver appropriate to the rack-mount screws
- Original packing materials from the chassis
- Packing tape
- Nylon strapping and crimping tool

## Repacking the BlackDiamond 8810 Chassis

To repack the BlackDiamond 8810 chassis:

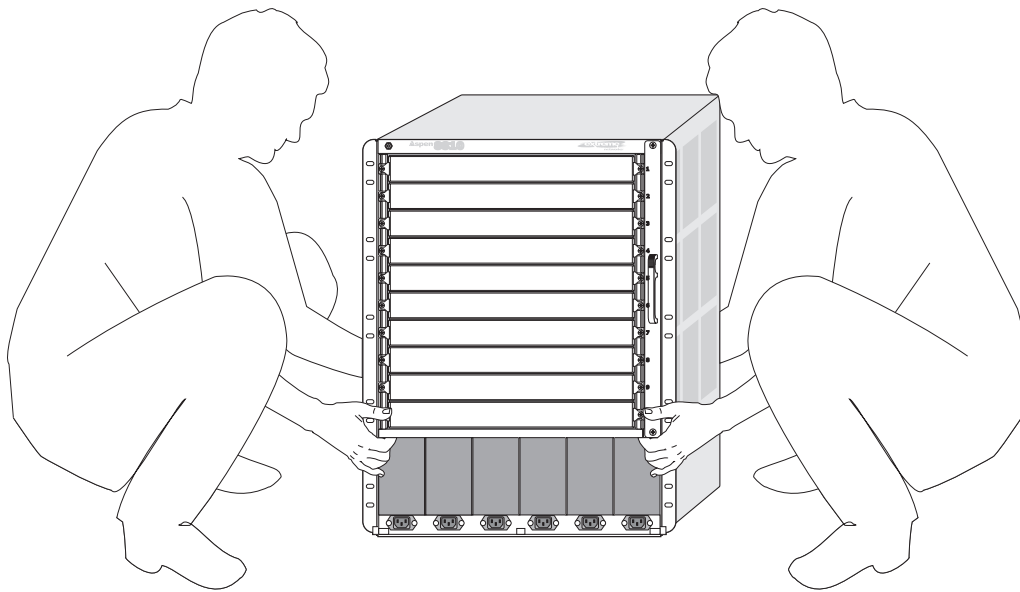
- 1 Attach the ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the chassis front panel.
- 2 Remove all modules and power supplies from the chassis. Follow correct Extreme Networks procedures for removing components.
- 3 Using four mounting screws, attach the helper bracket to the system rack immediately below the chassis.
- 4 Remove the eight mounting screws that secure the chassis to the system rack.
- 5 On each side of the chassis, place one hand in the empty power supply bay and the other hand in the recessed hand-hold on the back panel of the chassis (see [Figure 98](#)).



### CAUTION

*Do not use the fan tray handle to lift or maneuver the BlackDiamond 8810 chassis. This handle is not designed to support the weight of the chassis.*

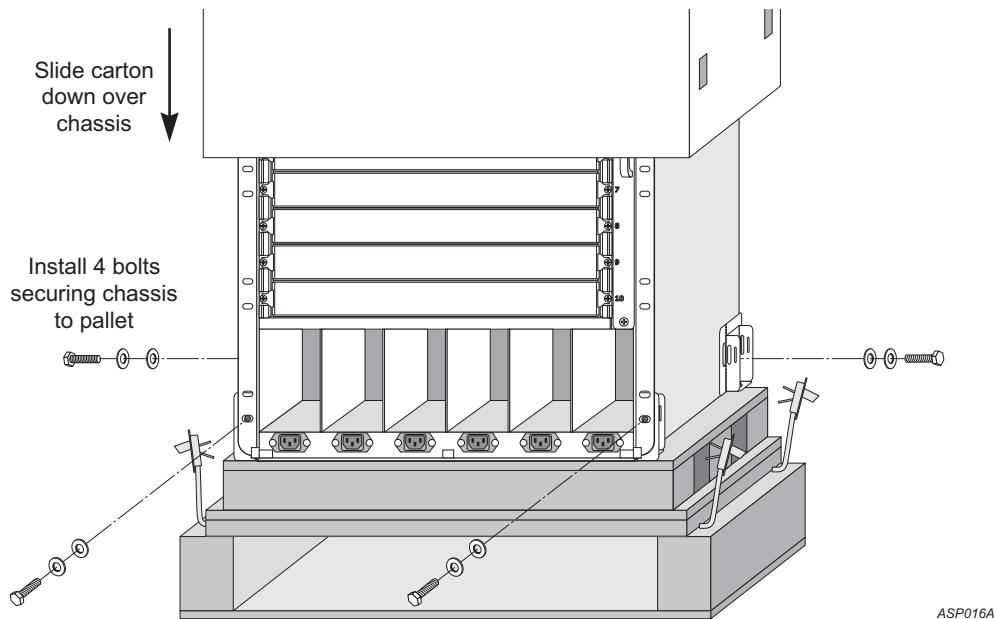
- 6 Slowly guide the chassis out of the system rack using the helper bracket for support.
- 7 Carefully lift the chassis off the helper bracket and lower it onto wood pallet (see [Figure 98](#)).

**Figure 98: Correct Method for Lifting the BlackDiamond 8810 Chassis**

ASP017A

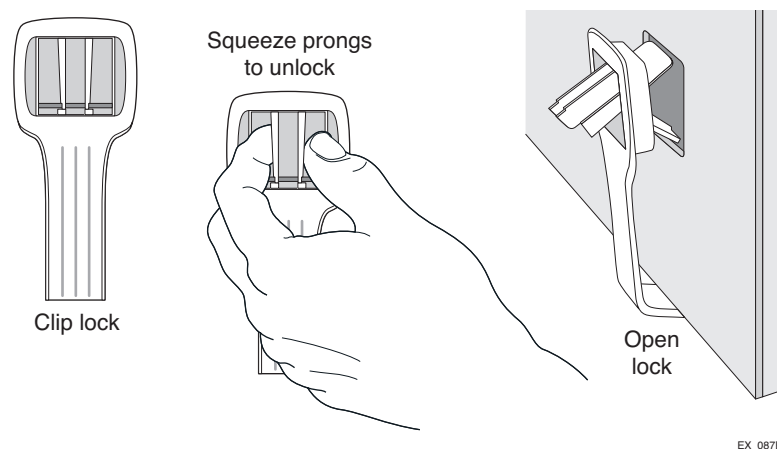
- 8 Attach all four restraining bolts to the four shipping brackets, securing the BlackDiamond 8810 chassis to the shipping pallet (see [Figure 99](#)).

**Figure 99: Recrating the BlackDiamond 8810 Chassis**



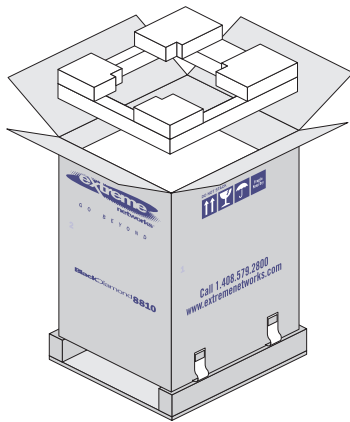
- 9 Slide the shipping carton down over the BlackDiamond 8810 chassis.
- 10 Insert the clip locks (see [Figure 100](#)).
  - a Place your thumb and index finger inside the clip lock to grasp the prongs.
  - b Squeeze the prongs inward applying equal pressure on each side.
  - c Push the prongs inward until the clip lock is secured to the carton.
  - d Repeat these steps to insert each remaining clip lock.

**Figure 100: Clip Locks on the BlackDiamond 8810 Shipping Carton**



- 11 Place the packing foam on top of the BlackDiamond 8810 chassis (see [Figure 101](#)).

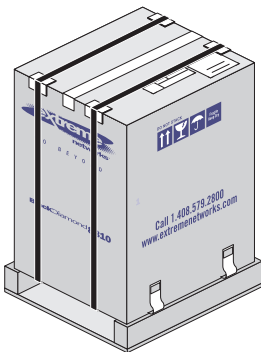
**Figure 101: Packing Foam in the BlackDiamond 8810 Shipping Carton**



ASP024A

- 12 Close the top flaps on the shipping carton and seal them with packing tape.
- 13 Secure the BlackDiamond 8810 shipping carton with nylon straps (see [Figure 102](#)).

**Figure 102: BlackDiamond 8810 Shipping Carton with Nylon Straps**



ASP026

## Repacking the BlackDiamond 8806 Chassis

To repack the BlackDiamond 8806 chassis:

- 1 Attach the ESD-preventive wrist strap to your bare wrist and connect the metal end to the ground receptacle on the chassis front panel.
- 2 Remove all modules and power supplies from the BlackDiamond 8806 chassis. Follow correct Extreme Networks procedures for removing components.
- 3 Using four rack mounting screws, attach the 19-inch helper bracket to the system rack immediately below the chassis.
- 4 Remove the eight rack mounting screws that secure the chassis to the system rack.
- 5 On each side of the chassis, place one hand in the empty power supply bay and the other hand in the recessed hand-hold on the back panel of the chassis.

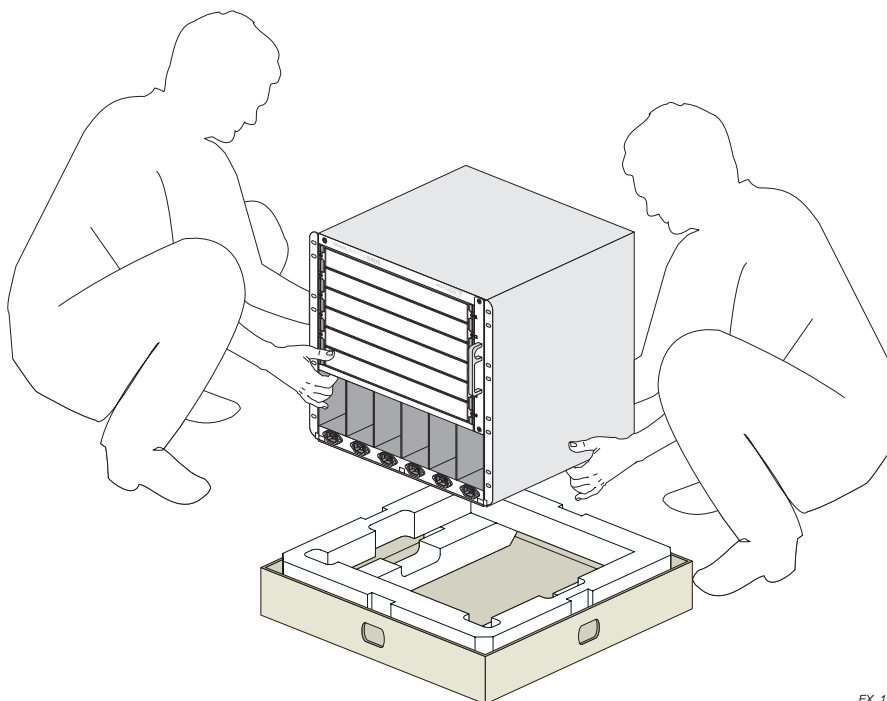


### CAUTION

*Do not use the fan tray handle to lift or maneuver the BlackDiamond 8806 chassis. This handle is not designed to support the weight of the chassis.*

- 6 Slowly guide the chassis out of the system rack using the helper bracket for support.
- 7 Carefully lift the chassis off the helper bracket and lower it onto the foam cushion in the shipping carton base (see [Figure 103](#).)

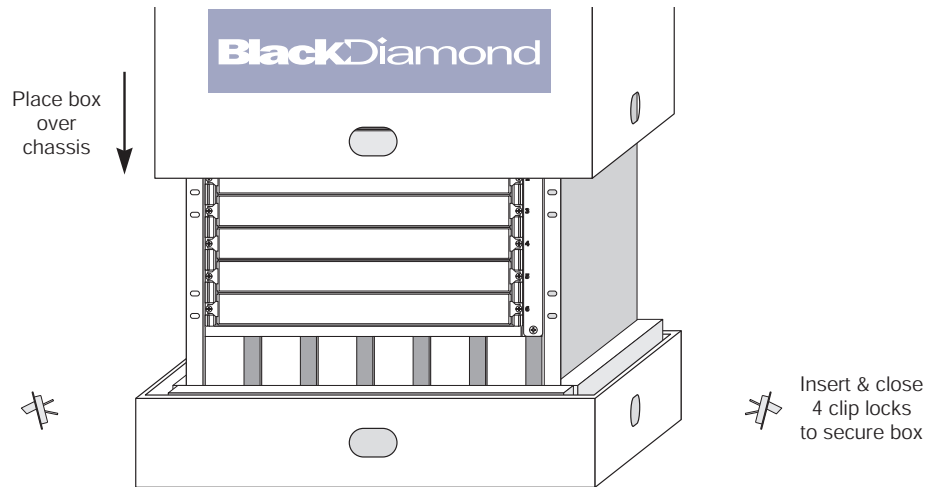
**Figure 103: Setting the BlackDiamond 8806 Chassis onto the Foam Cushion**



EX\_129

- 8 Slide the top of the BlackDiamond shipping carton down and over the BlackDiamond 8806 chassis (see [Figure 104](#)).

**Figure 104: Placing the Carton over the BlackDiamond 8806 Chassis**



EX\_121

- 9 Insert the clip locks (see [Figure 105](#)).
  - a Place your thumb and index finger inside the clip lock to grasp the prongs.
  - b Squeeze the prongs inward, applying equal pressure on each side.
  - c Push the prongs inward until the clip lock is secured onto the carton.

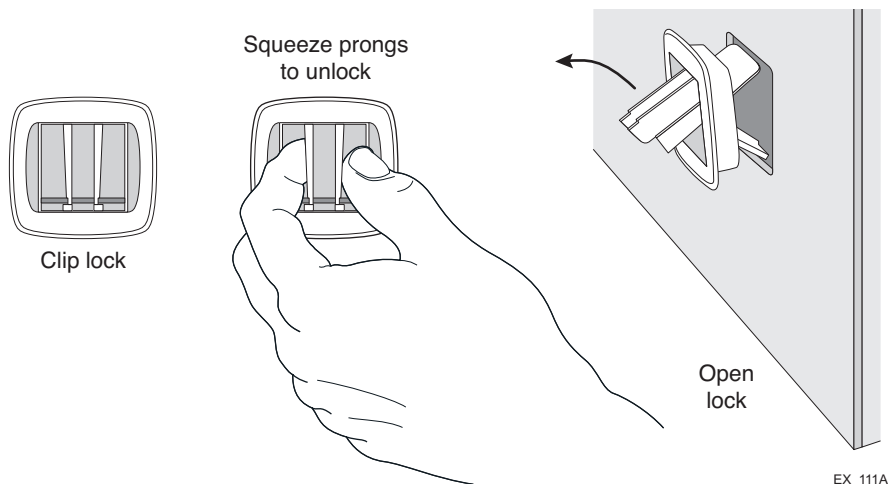
Repeat these steps to insert each of the remaining clip locks.



#### CAUTION

*Proper installation of the clip locks is critical for safe shipment of the BlackDiamond 8806 chassis. Make sure that the clip locks are secure and accurately installed.*

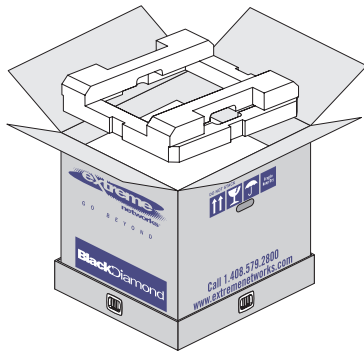
**Figure 105: Clip Locks on the BlackDiamond 8806 Chassis Shipping Carton**



EX\_111A

10 Place the packing foam material on top of the chassis as shown in [Figure 106](#).

**Figure 106: Packing Foam in the BlackDiamond 8806 Chassis Shipping Carton**



EX\_110B

11 Close the top flaps on the shipping carton and seal them with packing tape.

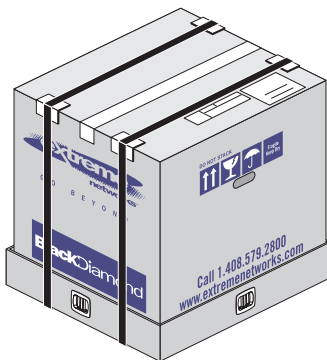
12 Secure the shipping carton with nylon straps (see [Figure 107](#)).



### NOTE

*Nylon straps are optional but are recommended by Extreme Networks for extra security during shipment. The installation of nylon straps requires a crimping tool. If you do not have nylon straps and a crimping tool available to secure the carton, the chassis can be shipped without the straps; however, it is critical that the clip locks be secure before shipment.*

**Figure 107: Nylon Straps Around BlackDiamond 8806 Chassis Shipping Carton**



EX\_113



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## 5

## Appendixes

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**WARNING!**

*Read the following safety information thoroughly before installing Extreme Networks products. Failure to follow this safety information can lead to personal injury or damage to the equipment.*

Only trained service personnel should perform service to Extreme Networks switches and their components. Trained service personnel have read all related installation manuals, have the technical training and experience necessary to be aware of the hazards to which they are exposed in performing a task, and are aware of measures to minimize the danger to themselves or other persons.

## Considerations Before Installing

Consider the following items before installing equipment.

- The system is designed to operate in a typical environmentally controlled Telco environment. Choose a site that has the following characteristics:
  - Temperature- and humidity-controlled, such that the maximum ambient room temperature shall not exceed 40°C (104°F)
  - Clean and free from airborne materials that can conduct electricity.
  - Well ventilated and away from sources of heat including direct sunlight.
  - Away from sources of vibration or physical shock.
  - Isolated from strong electromagnetic fields produced by electrical devices.
  - Secured, enclosed, and restricted-access, ensuring that only trained and qualified service personnel have access to the equipment.
- Establish at least 3 inches clearance on all sides for effective ventilation. Do not obstruct the air intake vent on the front, side, or rear ventilation grills. Locate the system away from heat sources.
- Make sure that your equipment is placed in an area that accommodates the power consumption and component heat dissipation specifications.
- Make sure that your power supplies meet the site power or AC power requirements of all network equipment.
- In regions that are susceptible to electrical storms, we recommend that you plug your system into a surge suppressor.

## Installing Power Supply Units

For the ratings and power requirements of each power supply unit, see [Appendix B, “Technical Specifications”](#) or the data sheet for the power supply at <http://www.extremenetworks.com>.

**WARNING!**

*Be sure that the requirements listed in this section are satisfied when installing all Extreme Networks power supplies.*

When you install power supplies:

- Plug power supplies only into properly grounded electrical outlets to help prevent electrical shock and comply with international safety standards.
- Use only power cords that are certified for use within the country of use. Do not attempt to modify AC power cords.
- The wall outlet must be installed near the equipment and be easily accessible for quick disconnect.
- Make sure the voltage and frequency of your power outlet match the system electrical ratings for the equipment. The building and/or power source must provide overload protection.
- Use a surge suppressor, line conditioner, or uninterruptible power supply to protect the system from momentary increases or decreases in electrical power.
- When inserting a hot-swappable power supply into the bay, do not use excessive force.
- If multiple power supplies are used in a switch, connect each power supply to a different, independent power source. If a single power source fails, it will affect only that power supply to which it is connected. If all the power supplies on a single switch are connected to the same power source, the entire switch is vulnerable to a power failure.

**WARNING!**

*Extreme Networks DC PSUs do not have switches for turning the unit on and off. Make sure that the DC circuit is de-energized before connecting or disconnecting the DC power cord at the DC power socket on the Extreme Networks DC PSU.*

*Wiring the DC PSU DC power cord to your facility DC source voltage must be performed by a qualified, licensed electrician.*

*Do not connect the power supply to an electrical outlet when the power supply is outside the chassis; doing so would expose a hazardous energy and poses a potential shock and fire hazard.*

*Do not put your hand into an open power supply bay when a power supply is not present. Empty power supply bays require a cover plate at all times.*

## Maintenance Safety

When you perform maintenance procedures on Extreme Networks equipment, follow these recommendations:

- Use only original accessories or components approved for use with this system. Failure to follow these instructions may damage the equipment or violate required safety and EMC regulations.
- The chassis cover should only be removed by Extreme Networks personnel. There are no customer serviceable components in this system. Repairs to the system must be performed by an Extreme Networks factory service technician.
- In systems that have power-on buttons, the power on button may not turn off all system power. To remove power from the system, you must unplug all power cords from wall outlets. The power cord is the disconnect device to the main power source.

- Disconnect all power before removing the back panel of any Extreme Networks switch, unless otherwise instructed by a product specific maintenance procedure.
- Disconnect all power cords before working near power supplies, unless otherwise instructed by a product-specific maintenance procedure.
- When you handle modules, optic devices, power supplies, or other modular accessories put on an ESD-preventive wrist strap to reduce the risk of electronic damage to the equipment. Connect the other end of the strap to the ESD connector on the front of the chassis. Leave the ESD-preventive wrist strap permanently attached to the chassis so that it is always available when you need to handle ESD-sensitive components.
- Install all cables in a manner that avoids strain. Use tie wraps or other strain relief devices.
- Replace power cord immediately if it shows any signs of damage.

## General Safety Precautions

Follow these guidelines:

- Do not attempt to lift objects that you think are too heavy for you.
- When you install equipment in a rack, load heavier devices in the lower half of the rack first to avoid making the rack top-heavy.
- Only use tools and equipment that are in perfect condition. Do not use equipment with visible damage.
- Routing cables: Route cables in a manner that prevents possible damage to the cables and avoids causing accidents, such as tripping.

## Cable Routing for LAN Systems

The BlackDiamond 8800 series switches meet the requirements for LAN system equipment. LAN systems are designed for intra-building installations; that is, cable runs between devices must be in the same building as the connected units.

This equipment can be connected between buildings if any one of the following conditions is true:

- Cable runs between buildings are less than 140 feet long.
- Cable runs between buildings are directly buried.
- Cable runs between buildings are in an underground conduit, where a continuous metallic cable shield or a continuous metallic conduit containing the cable is bonded to each building grounding electrode system.



### CAUTION

*Failure to follow these requirements for cable routing conditions may expose the user to electrical shock and expose the unit to errors or damage.*

## PoE Devices

When connecting power over Ethernet (PoE) devices to a PoE switch, all connections between the PoE device and the switch must remain inside the same building and use a low-voltage power distribution system per IEEE 802.3af.

## Selecting Power Supply Cords

Extreme Networks provides power input cords shipped in the product box for use in the US and Canada. Power supply cords for use outside of the United States and Canada are typically provided separately by third-party distribution centers. Contact the Extreme Networks TAC for questions regarding the proper selection of a power input cord for your specific switch.

The following are power cord requirements for use on Extreme switches:

### Black Diamond SSI AC PSU Model 60020:

- Wire: 16 AWG (1.31 mm<sup>2</sup>) minimum, 3-conductor flexible cable, Type SVT, SJT, HAR or equivalent, no longer than 10ft
- Wall plug: Suitable for use in country of installation & approved by local regulatory authority
- Device connector: IEC320-C13, 90 degree angle, rated at 15 A, 250 VAC
- Power cord assembly: Must be rated at 10A by in-country regulatory authority

### Black Diamond SSI DC PSU, Model 60021:

- Wire: UL LISTED Type TC (Tray Cable), three conductor, 8 AWG, jacketed, and marked (UL) TC, 90C min



#### NOTE

*Tray Cable is a UL US only requirement. Outside United States standard 8 AWG (8.35mm<sup>2</sup>), 90C wire is acceptable.*

- Wall plug: N/A, 3-conductor wires have been stripped and are ready for connection to DC power source mains
- Device Connector: Molex Shell Connector PN 42816-0312; Molex Pin Connectors PN 42815-0032
- Assembly Rating: 75VDC, 30A, (Do not disconnect under load)



#### WARNING!

*When using multiple power supplies, make sure that each power supply is attached to independent circuits breakers. See PS installation instructions of PS for proper sizing of circuit breaker.*

*Make sure that the source outlet is properly grounded according to the country's local electrical requirements before plugging the AC supply power cord into a PSU.*

*For specific product input power requirements refer to the data sheet of the product or modular PSU at <http://www.extremenetworks.com> or to Appendix B of this guide.*

The following countries have specific safety instructions concerning power connectors:

- Argentina: The supply plug must comply with Argentinean standards.
- Australia: Use AS 3112 for 110/220 VAC power supplies.
- Denmark: The supply plug must comply with section 107-2-D1, standard DK2-1a or DK2-5a.
- International: Use CEE 7/7 for 110/220 VAC power supplies.
- Japan:
  - Use JIS 8303 for 110/220 VAC power supplies.
  - The power cord provided with the power supply, switch, or chassis is for use only with that specific product from Extreme Networks; it is not for use with any other product from Extreme Networks or any other vendors' equipment.
- North America: The cord set must be cULus listed or cCSAus listed.
- Switzerland: The supply plug must comply with SEV/ASE 1011.
- United Kingdom: Use BS 1363 for 110/220 VAC power supplies.



#### NOTE

*This equipment is not intended to be directly powered by power distribution systems where phase-phase voltages exceed 240V AC (2P+PE), such as those used in Norway, France, and other countries. For these applications it is recommended that a transformer be used to step down the voltage to < 240V AC from phase-phase, or that you make a connection to a (P+N+PE) power distribution where voltages do not exceed 240V AC.*

*All installations should confirm that the product is reliably grounded according to the country's local electrical codes.*



#### NOTE

*Building codes vary worldwide; therefore, Extreme Networks strongly recommends that you consult an electrical contractor to ensure proper equipment grounding and power distribution for your specific installation & country.*

## Battery Replacement and Disposal

Batteries included with Extreme products are encapsulated and must be replaced by qualified Extreme Service personnel only. Contact your Extreme Service personnel for product replacement. Do not attempt to replace the battery. If these instructions are disregarded and replacement of these batteries is attempted, the following guidelines must be followed to avoid danger of explosion:

- 1 Replace with same or equivalent battery type as recommended by the battery manufacturer.
- 2 Dispose of battery in accordance with the battery manufacturer's recommendation.

## Fiber Optic Ports—Optical Safety

The following safety warnings apply to all optical devices used in Extreme Networks equipment that are removable or directly installed in an I/O module or chassis system. Such devices include but are not limited to gigabit interface converters (GBICs), small form factor pluggable (SFP) modules (or mini-GBICs), XENPAK transceivers, and XFP laser optic modules.

**WARNING!**

Laser optic modules become very hot after prolonged use. Take care when removing a laser optic module from the chassis or option card. If the laser optic module is too hot to touch, disengage the laser optic module and allow it to cool before removing it completely.

**WARNING!**

When working with laser optic modules, always take the following precautions to avoid exposure to hazardous radiation.

- Never look at the transmit LED/laser through a magnifying device while it is powered on.
- Never look directly at a fiber port on the switch or at the ends of a fiber cable when they are powered on.
- Invisible laser radiation can occur when the connectors are open. Avoid direct eye exposure to the beam when optical connections are unplugged.
- Never alter, modify, or change an optical device in any way other than suggested in this document.

## GBIC, SFP (Mini-GBIC), XENPAK, and XFP Regulatory Compliance

Extreme Networks pluggable optical modules meet the following regulatory requirements:

- Class 1 Laser Product
- EN60825-1+A2:2001 or later, European laser standard
- FCC 21 CFR Chapter 1, Subchapter J in accordance with FDA & CDRH requirements
- Application of CE Mark in accordance with 89/336/EEC EMC and 73/23/EEC Low Voltage Directives
- UL and/or CSA registered component for North America
- 47 CFR Part 15, Class A when installed into Extreme products

**NOTE**

Extreme Networks optical modules are tested to work in all supported Extreme Networks switches. We recommend that all customers use Extreme Networks optical modules in their Extreme Networks switches. Extreme Networks assumes no liability for third-party optical modules. While Extreme Networks does not block third-party optical modules, we cannot ensure that all third-party optical modules operate properly in all Extreme Networks switches. The customer assumes all risks associated with using third-party optical modules in Extreme Networks switches.



# Sicherheitshinweise

*Vor der Installation der Produkte von Extreme Networks sind die nachfolgenden Sicherheitshinweise aufmerksam zu lesen. Die Nichtbeachtung dieser Sicherheitshinweise kann zu Verletzungen oder Schäden an der Ausrüstung führen.*

Installation, Wartung und Ausbau eines Switch, einer Grundplatte oder einer seiner Komponenten dürfen nur von geschultem und qualifiziertem Servicepersonal durchgeführt werden! Geschulte und qualifizierte Servicetechniker verfügen über die erforderliche technische Ausbildung und Erfahrung, um mögliche Gefahren bei der Durchführung von Servicearbeiten zu erkennen und Maßnahmen zur Minimierung der Gefahr für sich bzw. andere zu treffen.

## Hinweise zur Installation

*Beachten Sie vor der Installation der Ausrüstung folgende Punkte.*

Stellen Sie sicher, dass die nachfolgend aufgeführten Bedingungen erfüllt sind:

- Das System ist für den Einsatz in einer typischen Umgebung gemäß Telco-Vorgaben vorgesehen. Wählen Sie einen Aufstellort mit den folgenden Eigenschaften:
  - Innenbereich mit Temperatur- und Feuchtigkeitsregelung, wobei die maximale Raumtemperatur 40°C (104°F) nicht überschreiten darf.
  - Sauber und frei von elektrisch aufladbaren Teilchen in der Luft.
  - Ausreichende Belüftung und Abstand zu Wärmequellen, einschließlich direktem Sonnenlicht
  - Ausreichender Abstand zu Quellen, die Erschütterungen oder Schläge/Stöße hervorrufen können
  - Isolierung von starken elektromagnetischen Feldern, wie sie durch Elektrogeräte erzeugt werden
  - Sicherer, abgeschlossener Arbeitsbereich mit beschränktem Zugang, sodass nur geschultes und qualifiziertes Servicepersonal Zugriff auf das Gerät hat
  - In für elektrische Stürme anfälligen Gebieten wird empfohlen, das System an einen Spannungsstoßunterdrücker anzuschließen.
  - Die Ausrüstung im unteren Teil des Gestells installieren, um zu vermeiden, dass der obere Teil des Gestells zu schwer wird.
  - Auf allen Seiten für mindestens 7,5 cm (3") Abstand sorgen, um eine ausreichende Belüftung zu gewährleisten. Die Lufteinlassöffnung an den vorderen, seitlichen und hinteren Entlüftungsgittern nicht blockieren. Das System nicht in der Nähe von Wärmequellen aufstellen.
- Sicherstellen, dass die Ausrüstung in einem Bereich aufgestellt wird, der den Spezifikationen für Leistungsaufnahme und Wärmeabstrahlung der Komponenten entspricht.
- Sicherstellen, dass Ihre Netzteile die Anforderungen an die Strom- oder Wechselstromversorgung vor Ort für alle Netzwerkgeräte erfüllen.
- Bei den Extreme-Produkten handelt es sich um digitale Geräte der Klasse A gemäß Teil 15 der FCC-Richtlinien und anderen internationalen Richtlinien. Der Gerätebetrieb unterliegt den folgenden Voraussetzungen: (1) Das Gerät kann schädliche Interferenzen verursachen, und (2) das Gerät muss jede empfangene Interferenz zulassen, einschließlich einer Interferenz, die einen unerwünschten Betrieb verursachen kann.

## Installation von Netzteilen

*Bei der Installation sämtlicher Netzteile von Extreme Networks muss sichergestellt werden, dass die nachfolgend aufgeführten Anforderungen erfüllt sind. Angaben zu Nennleistung und Leistungsbedarf finden sich in den Installationsanweisungen für das jeweilige Netzteil (Power Supply Unit, PSU).*

Folgende Anforderungen müssen unbedingt erfüllt sein:

- Wenn der mit Wechsel- oder Gleichstrom betriebene Switch von Extreme Networks mit einem externen grünen/gelben Erdungskabel ausgestattet ist, dann muss zunächst dieses Erdungskabel zwischen der Grundplatte und einem geeigneten Erdungspunkt angeschlossen werden, bevor andere Verbindungen zum Gerät hergestellt werden; dies gilt auch für den Anschluss an das Wechsel- bzw. Gleichstromnetz. Beim Ausbau des Geräts aus dem Gestell muss das Erdungskabel als letztes getrennt werden.
- Netzteile nur an vorschriftsmäßig geerdete Steckdosen anschließen, um die Gefahr elektrischer Schläge zu vermeiden und die Konformität mit internationalen Sicherheitsnormen zu gewährleisten.
- Nur Stromkabel verwenden, die für den Einsatz in dem jeweiligen Land zugelassen sind. Wechselstromkabel dürfen nicht manipuliert werden.
- Die Wandsteckdose muss in der Nähe der Anlage installiert und leicht zugänglich sein, um eine schnelle Trennung vom Netz zu ermöglichen.
- Spannung und Frequenz der Steckdose müssen den elektrischen Nenndaten des Systems entsprechen. Das Gebäude bzw. die Stromquelle muss mit einem Überlastschutz ausgestattet sein.
- Einen Spannungsstoßunterdrücker, einen Netzfilter oder eine unterbrechungsfreie Stromversorgung verwenden, um das System vor einer vorübergehenden Zu- oder Abnahme der elektrischen Leistung zu schützen.
- Bei laufendem Betrieb austauschbare Netzteile: Das Netzteil vorsichtig, nicht mit Kraft in das Aufnahmefach einsetzen.
- Bei Einsatz mehrerer Netzteile in einem Switch sind die Netzteile jeweils an unterschiedliche, unabhängige Stromquellen anzuschließen. Auf diese Weise ist bei einem Ausfall einer einzelnen Stromquelle nur das daran angeschlossene Netzteil betroffen. Wenn alle Netzteile eines einzelnen Switch an dieselbe Stromquelle angeschlossen sind, ist der gesamte Switch für einen Ausfall der Stromversorgung anfällig.

Leistungsspezifikationen für Netzteile von Extreme Networks finden sich in Anhang B dieses Dokuments oder im Netzteil-Datenblatt unter <http://www.extremenetworks.com>.

*Die 325 W DC-Netzteile von Extreme Networks sind nicht mit Ein-/Ausschaltern ausgestattet. Vor dem Einstecken des Gleichstromkabels in den Gleichstromanschluss des 325 W DC-Netzteils von Extreme Networks sowie vor dem Abziehen des Kabels sicherstellen, dass der Gleichstromkreis abgeschaltet ist.*

*Das Gleichstromkabel des 325 W DC-Netzteils muss von einem qualifizierten, zugelassenen Elektriker an die Gleichspannungsquelle in Ihrem Gebäude angeschlossen werden.*

*Extreme Networks 325 W AC Netzteile haben keinen An- Aus Schalter. Die Stromzufuhr zu einem Extreme Networks 325 W AC Netzteil wird durch das Ziehen des Netzkabels unterbrochen. Es ist sicherzustellen, dass diese Verbindung leicht zugänglich ist.*

*Das Netzteil nicht ausserhalb von dem Gehäuse an das Netz anschliessen da hierdurch gefährliche Spannungen zugänglich werden sowie die Gefahr von einem elektrischem Schlag und/ oder Feuergefahr besteht.*

*Nicht die Hand in den Netzteilschacht einführen wenn das Netzteil entfernt ist. Leere Netzteilschächte müssen immer mit eine Abdeckplatte bedeckt sein.*

## Wartungssicherheit

Folgende Vorsichtsmaßnahmen müssen getroffen werden:

- Nur für den Einsatz mit diesem System zugelassene Originalzubehöerteile bzw. -komponenten verwenden. Die Nichtbeachtung dieser Anweisungen kann zu Schäden an der Ausrüstung oder sogar zu einem Verstoß gegen die erforderlichen Sicherheitsbestimmungen und EMV-Vorschriften führen.
- Die Abdeckung der Grundplatte darf nur durch Personal von Extreme Networks entfernt werden. Das System enthält keine vom Kunden zu wartenden Komponenten. Reparaturen am System sind von einem Werkstechniker von Extreme Networks durchzuführen.
- Der An-/Aus-Schalter des Systems darf nicht die gesamte Stromversorgung zum System unterbrechen. Zur Unterbrechung der Wechselstromversorgung zum System müssen alle Stromkabel aus den Wandsteckdosen gezogen werden. Das Stromkabel dient zur Trennung von der Netzstromversorgung.
- Vor dem Entfernen der Rückwand eines Extreme Networks-Switch muss die gesamte Stromzufuhr unterbrochen werden.
- Vor der Aufnahme von Arbeiten in der Nähe von Stromquellen alle Stromkabel abziehen, sofern nicht im Rahmen eines Wartungsverfahrens anders vorgegeben.
- Beim Umgang mit Modulen, optischen Geräten, Netzteilen oder anderen modularen Zubehörteilen das ESD-Schutzarmband anlegen, um das Risiko einer Beschädigung der Geräte durch elektrostatische Entladungen zu verringern. Das Armband zum Schutz elektrostatisch gefährdeter Bauteile (ESB) grundsätzlich an der Grundplatte befestigt lassen, damit es beim Umgang mit diesen Bauteilen immer zur Hand ist.
- Alle Kabel so verlegen, dass übermäßige Belastungen vermieden werden. Kabelbinder oder Zugentlastungsklemmen verwenden.
- Ein Stromkabel bei Anzeichen von Beschädigungen unverzüglich austauschen.

## Allgemeine Sicherheitsvorkehrungen

Folgende Richtlinien sind unbedingt zu befolgen:

- Keine Gegenstände heben, die möglicherweise zu schwer sind.
- Bei einer Installation in einem Gestell darauf achten, dass schwere Geräte unten im Gestell eingebaut werden, um Gefahren durch Umkippen zu vermeiden.
- Bei Summit Desktop-Switches keinen Monitor oder andere Gegenstände auf die Anlage stellen. Die Abdeckung der Grundplatte ist nicht darauf ausgelegt, Gewicht zu tragen.
- Nur Werkzeuge und Ausrüstung verwenden, die sich in einwandfreiem Zustand befinden. Keine Ausrüstung verwenden, die sichtbare Beschädigungen aufweist.
- Verlegen von Kabeln: Kabel so verlegen, dass keine Schäden entstehen oder Unfälle, z. B. durch Stolpern, verursacht werden können.

## Auswahl der Stromkabel

Je nachdem, welchen Switch Sie erworben haben, werden die Wechselstromnetzteile von Extreme Networks entweder nur mit einem 110-VAC-Kabel oder mit einem 110-VAC-Kabel und einem 208/220-VAC-Kabel geliefert. Die von Extreme Networks gelieferten Stromkabel sind nur für den Einsatz in den Vereinigten Staaten und Kanada ausgelegt und zugelassen. Stromkabel für den Einsatz außerhalb der

Vereinigten Staaten und Kanada werden normalerweise von einem Drittanbieter geliefert und müssen die folgenden Anforderungen erfüllen:

- Die Stromkabel müssen offiziell für das Land zugelassen sein, in dem sie verwendet werden sollen.
- Die Stromkabel müssen mit einem für das Einsatzland zugelassenen Wandsteckkontakt mit der geeigneten Nennleistung ausgerüstet sein.
- Die Konfiguration der Steckvorrichtung (die Steckverbindung zur Einheit, nicht zur Wandsteckdose) muss für eine Gerätesteckdose gemäß EN60320/IEC320-C14 ausgeführt sein.
- Die Länge der Stromkabel muss weniger als 5 m (15 Fuß) betragen.
- Die Mindestspezifikation für das flexible Kabel lautet:
  - Nr. 18 AWG (0,823 mm<sup>2</sup>) für Einheiten mit einem Bemessungsstrom von weniger als 10 A, oder
  - Nr. 18 AWG (0,823 mm<sup>2</sup>) bis 2 m Länge für Einheiten mit einem Bemessungsstrom von 10 A oder höher, oder
  - Nr. 16 AWG (1,0 mm<sup>2</sup>) bis 5 m Länge für Einheiten mit einem Bemessungsstrom von 10 A oder höher
- Bei allen Kabeln muss es sich um 3-adrige Kupferleiter vom Typ SVT oder SJT, HAR oder einen äquivalenten Typ handeln.

Verwenden Sie immer ein Wechselstromkabel, das den Vorschriften Ihres Landes entspricht. Erkundigen Sie sich über die örtlichen Vorschriften für Elektroinstallationen und fragen Sie bei den zuständigen Aufsichtsbehörden nach den Anforderungen an Stromkabel. Nähere Angaben zu den Leistungsspezifikationen von Netzteilen finden sich unter <http://www.extremenetworks.com> oder in Anhang B dieses Dokuments.

*Vor dem Anschließen des Wechselstromkabels an ein Netzteil muss sichergestellt werden, dass die Steckdose vorschriftsgemäß geerdet ist.*

Für die unten aufgeführten Länder gelten zusätzlich folgende Anforderungen:

- Argentinien: Der Netzstecker muss den argentinischen Standards entsprechen.
- Australien: Versorgungssteckdose, 15 A Minimum, AS 3112 für 110/220-VAC-Netzteile
- Dänemark: Der Netzstecker muss die in Abschnitt 107-2-D1 der Norm DK2-1a oder DK2-5a aufgeführten Bestimmungen erfüllen.
- Japan:
  - Versorgungssteckdose, 15 A, JIS 8303 für 110/220-VAC-Netzteile.
  - Das mit dem Netzteil, dem Switch oder der Grundplatte gelieferte Verbindungskabel ist nur für den Einsatz mit dem spezifischen Produkt von Extreme Networks vorgesehen und darf nicht mit anderen Geräten von Extreme Networks oder anderen Anbietern verwendet werden.
- Nordamerika: Versorgungssteckdose, 15 A, NEMA 5-15 für 110-VAC-Netzteile und NEMA L6-15P für 208/220-VAC-Netzteile
- Schweiz: Der Netzstecker muss der Richtlinie SEV/ASE 1011 entsprechen.
- Großbritannien: Versorgungssteckdose, 15 A, BS 1363 für 110/220-VAC-Netzteile
- International: Versorgungssteckdose, 15 A, CEE 7/7 für 110/220-VAC-Netzteile
- Nur Frankreich und Peru:

Diese Einheit kann nicht über IT+-Netzteile mit Strom versorgt werden. Wenn Ihre Netzteile vom Typ IT sind, muss dieses Gerät mit 230 V (2P+T) unter Verwendung eines Trenntrafos mit einem Verhältnis von 1:1 versorgt werden. Der zweite Anschlusspunkt muss als neutral definiert und direkt an die Erde angeschlossen werden.

Hinweis: Die Bauvorschriften sind weltweit verschieden; Extreme Networks empfiehlt daher ausdrücklich, einen Elektroinstallateur zu beauftragen, um die sachgemäße Geräteerdung und Stromverteilung für Ihre spezifische Installation sicherzustellen.

## Austauschen und Entsorgen von Batterien

Im Umgang mit Batterien sind folgende Hinweise zu beachten:

- Austauschen der Lithium-Batterie: Die in diesem Gerät enthaltenen Batterien können nicht vom Anwender ausgetauscht werden. Wenden Sie sich für einen Austausch des kompletten Gerätes bitte an die Servicemitarbeiter von Extreme. Sollte der Versuch eines Austausches unternommen werden, sind zur Vermeidung einer Explosionsgefahr folgende Richtlinien zu beachten:
  - a Die Batterie nur durch eine identische oder eine gleichwertige, vom Hersteller empfohlene Batterie ersetzen.
  - b Die Batterie gemäß den Empfehlungen des Herstellers entsorgen.

## Lichtleiteranschlüsse: Optische Sicherheit

Beim Umgang mit Lichtleitermodulen sind folgende Vorsichtsmaßnahmen zu beachten:

- *Niemals durch ein Vergrößerungsgerät auf die übertragende LED/den Laser schauen, wenn diese(r) eingeschaltet ist.*
- *Niemals direkt auf einen Lichtleiteranschluss am Switch oder auf die Enden eines Faserkabels schauen, wenn diese eingeschaltet sind.*
- *Bei offenen Anschlüssen kann es zu unsichtbarer Laserstrahlung kommen. Direkter Augenkontakt mit dem Strahl ist zu vermeiden.*
- *Ein optisches Gerät niemals auf andere Weise verändern oder modifizieren als in diesem Dokument angegeben.*

## Einhaltung behördlicher Vorschriften durch GBIC, SFP (Mini-GBIC), XENPAK und XFP

- Laserprodukt der Klasse 1
- EN60825-1+A2:2001 oder jünger, Europäische Richtlinie für Lasersysteme
- Anwendung der CE-Kennzeichnung gemäß der Richtlinien 89/336/EWG EMV und 73/23/EWG für Niederspannungsgeräte



## B Technical Specifications

This appendix includes the following technical specifications:

- [BlackDiamond 8810 Switch on page 167](#)
- [BlackDiamond 8806 Switch on page 170](#)
- [Power Supplies for BlackDiamond 8800 Series Switches on page 172](#)
- [Connector Pinouts on page 173](#)

### BlackDiamond 8810 Switch

**Table 19: BlackDiamond 8810 Switch Technical Specifications**

#### Physical Dimensions

BlackDiamond 8810 chassis	Height: 24.47 inches (62.2 cm) Width: 17.51 inches (44.5 cm) Depth: 18.23 inches (46.3 cm)
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#### Weight

BlackDiamond 8810 chassis (empty)	79 lb (35.8 kg)
BlackDiamond 8810 chassis (fully loaded)	196 lb (88.9 kg)
Power supply	7 lb (3.2 kg)
BlackDiamond 8810 fan tray	6.75 lb (3.06 kg)
BlackDiamond 8810 PSU/fan controller	1.75 lb (.79 kg)

#### Safety Standards

North American Safety of ITE	UL 60950-1:2003 1st Ed., Listed Device (US) CSA 22.2#60950-1-03 1st Ed.(Canada) Complies with FCC 21CFR 1040.10 (US Laser Safety) CDRH Letter of Approval (US FDA Approval) NOM/NYCE (Mexico) IEEE 802.3af 6-2003 Environment A for PoE Applications
European Safety of ITE	EN 60950-1:2001+A11 EN 60825-1+A2:2001 (Lasers Safety) TUV-R GS Mark by German Notified Body 73/23/EEC Low Voltage Directive
International Safety of ITE	CB Report & Certificate per IEC 60950-1:2001 Country Deviations AS/NZX 60950-1(Australia /New Zealand)

**Table 19: BlackDiamond 8810 Switch Technical Specifications (Continued)**
**EMI/EMC Standards**

North America EMC for ITE	FCC CFR 47 part 15 Class A (USA) ICES-003 Class A (Canada)
European EMC standards	EN 55022:1998 Class A EN 55024:1998 Class A includes IEC 61000-4-2, 3, 4, 5, 6, 8, 11 EN 61000-3-2,3 (Harmonics & Flicker) ETSI EN 300 386:2001 (EMC Telecommunications) 89/336/EEC EMC Directive
International EMC Certifications	CISPR 22:1997 Class A (International Emissions) CISPR 24:1997 Class A (International Immunity) IEC/EN 61000-4-2 Electrostatic Discharge, 8kV Contact, 15kV Air, Criteria A IEC/EN 61000-4-3 Radiated Immunity 10V/m, Criteria A IEC/EN 61000-4-4 Transient Burst, 1kV, Criteria A IEC/EN 61000-4-5 Surge, 2kV, 4kV, Criteria A IEC/EN 61000-4-6 Conducted Immunity, 0.15-80MHz, 10V/m unmod. RMS, Criteria A IEC/EN 61000-4-11 Power Dips & Interruptions, >30%, 25 periods, Criteria C
Country-specific	VCCI Class A (Japan Emissions) AS/NZS 3548 ACA (Australia Emissions) CNS 13438:1997 Class A (BSMI-Taiwan) MIC Mark, EMC Approval (North Korea)

**Telecom Standards**

ETSI EN 300 386:2001 (EMC Telecommunications)  
ETSI EN 300 019 (Environmental for Telecommunications)

**IEEE 802.3 Media Access Standards**

Note: These standards are module-specific and may not apply to every module in the series.

IEEE 802.3 10BASE-T  
IEEE 802.3u 100BASE-TX, 100BASE-FX  
IEEE 802.3z 1000BASE-X  
IEEE 802.3ab 1000BASE-T  
IEEE 802.3ac VLAN Tag  
IEEE 802.3ad Link Aggregation  
IEEE 802.3ae 10GBASE-X  
IEEE 802.3aef Power over Ethernet

**Environmental Standards**

Environmental	EN/ETSI 300 019-2-1 v2.1.2 - Class 1.2 Storage EN/ETSI 300 019-2-2 v2.1.2 - Class 2.3 Transportation EN/ETSI 300 019-2-3 v2.1.2 - Class 3.1e Operational EN/ETSI 300 753 (1997-10) - Acoustic Noise ASTM D3580 Random Vibration Unpackaged 1.5G
Operating conditions	Operating temperature range: 0° C to 40° C (32° F to 104° F) Operating humidity: 10% to 93% relative humidity, non-condensing Operational shock: 30 m/s <sup>2</sup> (3 g), 11 ms, 60 shocks Operational sine vibration: 5 to 100 to 5 Hz @ 0.2 g, 0 to peak, 0.1 oct./min. Operational random vibration: 3 to 500 Hz @ 1.5g rms
Storage & transportation conditions (packaged)	Transportation temperature: -40° C to 70° C (-40° F to 158° F) Storage and transportation humidity: 10% to 93% relative humidity, non-condensing Packaged shock (half sine): <50 kg 180 m/s <sup>2</sup> (10 g), 6 ms, 600 shocks, modules >50 kg 100 m/s <sup>2</sup> (6 g), 11 ms, 600 shocks, chassis  Packaged random vibration: 5 to 20 Hz @ 1.0 ASD w/-3 dB/oct. from 20 to 200 Hz 14 drops minimum on sides & corners @ 39.5" <22 lb (10 kg) modules @ 11.8" <110 lb (50 kg) chassis



Table 19: BlackDiamond 8810 Switch Technical Specifications (Continued)

<b>Acoustic Sound</b> (BlackDiamond 8810 Switch with AC Power Supplies)	
Sound power in accordance with EN 300 753 (10-1997)	Sound power
	Normal: 70 dBA per ISO 7779
	High: 75 dBA per ISO 7779
Sound pressure in accordance with NEBS GR-63 Issue 2	Declared sound power
	Normal: 7.2 belsA per ISO 7779 & ISO 9296
	High: 7.7 belsA per ISO 7779 & ISO 9296
	Bystander sound pressure
	Normal: 64 dBA front side @ 0.6m
	High: 67 dBA rear side @ 0.6m

## BlackDiamond 8806 Switch

**Table 20: BlackDiamond 8806 switch Technical Specifications**

### Physical Dimensions

BlackDiamond 8806 chassis	Height: 17.47 inches (44.4 cm)
	Width: 17.51 inches (44.5 cm)
	Depth: 18.12 inches (46.0 cm)

### Weight

BlackDiamond 8806 chassis (empty)	63.75 lb (29.0 kg)
BlackDiamond 8806 chassis (fully loaded)	153 lb (69.5 kg)
BlackDiamond 8806 power supply	7 lb (3.2 kg)
BlackDiamond 8806 fan tray	4.75 lb (2.2 kg)
BlackDiamond 8806 PSU/Fan Controller	1.75 lb (.79 kg)

### Safety Standards

North American Safety of ITE	UL 60950-1:2003 1st Ed., Listed Device (US) CSA 22.2#60950-1-03 1st Ed.(Canada) Complies with FCC 21CFR 1040.10 (US Laser Safety) CDRH Letter of Approval (US FDA Approval) NOM/NYCE (Mexico) IEEE 802.3af 6-2003 Environment A for PoE Applications
European Safety of ITE	EN 60950-1:2001+A11 EN 60825-1+A2:2001 (Lasers Safety) TUV-R GS Mark by German Notified Body 73/23/EEC Low Voltage Directive
International Safety of ITE	CB Report & Certificate per IEC 60950-1:2001 Country Deviations AS/NZX 60950-1 (Australia /New Zealand)

### EMI/EMC Standards

North America EMC for ITE	FCC CFR 47 part 15 Class A (USA) ICES-003 Class A (Canada)
European EMC standards	EN 55022:1998 Class A EN 55024:1998 Class A includes IEC 61000-4-2, 3, 4, 5, 6, 8, 11 EN 61000-3-2,3 (Harmonics & Flicker) ETSI EN 300 386:2001 (EMC Telecommunications) 89/336/EEC EMC Directive
International EMC certifications	CISPR 22:1997 Class A (International Emissions) CISPR 24:1997 Class A (International Immunity) IEC/EN 61000-4-2 Electrostatic Discharge, 8kV Contact, 15kV Air, Criteria A IEC/EN 61000-4-3 Radiated Immunity 10V/m, Criteria A IEC/EN 61000-4-4 Transient Burst, 1kV, Criteria A IEC/EN 61000-4-5 Surge, 2kV, 4kV, Criteria A IEC/EN 61000-4-6 Conducted Immunity, 0.15-80MHz, 10V/m unmod. RMS, Criteria A IEC/EN 61000-4-11 Power Dips & Interruptions, >30%, 25 periods, Criteria C

**Table 20: BlackDiamond 8806 switch Technical Specifications (Continued)**

Country-specific	VCCI Class A (Japan Emissions) AS/NZS 3548 ACA (Australia Emissions) CNS 13438:1997 Class A (BSMI-Taiwan) MIC Mark, EMC Approval (North Korea)
<b>Telecom Standards</b>	ETSI EN 300 386:2001 (EMC Telecommunications) ETSI EN 300 019 (Environmental for Telecommunications)
<b>IEEE 802.3 Media Access Standards</b>	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX, 100BASE-FX IEEE 802.3z 1000BASE-X IEEE 802.3ab 1000BASE-T IEEE 802.3ac VLAN Tag IEEE 802.3ad Link Aggregation IEEE 802.3ae 10GBASE-X IEEE 802.3aef Power over Ethernet
Note: These standards are module-specific and may not apply to every module in the series.	
<b>Environmental Standards</b>	
Environmental	EN/ETSI 300 019-2-1 v2.1.2 - Class 1.2 Storage EN/ETSI 300 019-2-2 v2.1.2 - Class 2.3 Transportation EN/ETSI 300 019-2-3 v2.1.2 - Class 3.1e Operational EN/ETSI 300 753 (1997-10) - Acoustic Noise
Operating conditions	Operating temperature range: 0° C to 40° C (32° F to 104° F) Operating humidity: 10% to 93% relative humidity, non-condensing Operating altitude 0 to 3000 meters (0 to 9,850 ft) Operational shock: 30 m/s <sup>2</sup> (3 g), 11 ms, 60 shocks Operational random vibration: 5 to 500 Hz @ 1.5g rms
Storage & Transportation Conditions (Packaged)	Transportation temperature: -40° C to 70° C (-40° F to 158° F) Storage and transportation humidity: 10% to 93% relative humidity, non-condensing Packaged shock (half sine): <50 kg 180 m/s <sup>2</sup> (10 g), 6 ms, 600 shocks, modules >50 kg 100 m/s <sup>2</sup> (6 g), 11 ms, 600 shocks, chassis Packaged random vibration: 5 to 20 Hz @ 1.0 ASD w/-3 dB/oct. from 20 to 200 Hz Packaged sinusoidal vibration: 5 to 62 Hz, 5 mm/s velocity, 62 to 200 Hz, 0.2 g Tilt: 22.5 degrees and return to position 14 drops minimum on sides & corners @ 39.4" <20 lb (9 kg) modules @ 19.7" <80 lb (36 kg) chassis
<b>Acoustic Sound (BlackDiamond 8806/12804 switch with AC Power Supplies)</b>	
Sound power in accordance with EN 300 753 (10-1997)	Sound power Normal: 70 dBA per ISO 7779 High: 73 dBA per ISO 7779  Declared sound power Normal: 7.2 belsA per ISO 7779 & ISO 9296 High: 7.6 belsA per ISO 7779 & ISO 9296
Sound pressure in accordance with NEBS GR-63 Issue 2	Bystander sound pressure Normal: 64 dBA front side @ 0.6m High: 66 dBA left side @ 0.6m

## Power Supplies for BlackDiamond 8800 Series Switches

**Table 21: Specifications for the AC SSI PS Model #60020/PS2336 (700/1200 W AC PSU)**

Compatible with the BlackDiamond 8806 and 8810 switches	
Typical configuration	3 power supplies
Full configuration	6 power supplies
Input	Nominal input: 100 to 240 V ~, 60/50 Hz, 10 A max AC voltage input range: 90 to 264 V ~ Maximum input amperages: 7 A @ 200 V ~ (high-line) 10 A @ 90 V ~ (low-line) AC line frequency: 47 to 63 Hz PS input socket: IEC 320 C14 Minimum wire size: 16 AWG (1.31mm <sup>2</sup> ) copper stranded
Output	DC output: 48 V =, 24 A/12 V =, 4 A (high-line) 48 V =, 13.5 A/12 V =, 4 A (low-line) DC output power (W): 700 to 1200 W
Power supply cord selection	Refer to <a href="#">“Selecting Power Supply Cords” on page 158.</a>
AC power supply input socket	IEC 320 C14
Minimum wire size	16 AWG (1.0mm <sup>2</sup> ) copper stranded (pre-approved cord set for country of use)
Operating conditions	Operating temperature: 0° C to 40° C Storage temperature: -40° C to 70° C Operating humidity: 10% to 90% relative humidity, non-condensing Operational shock: 30 m/s <sup>2</sup> (3 g)

**Table 22: Specifications for the AC PS Model #41050 (600/900 W AC PSU)**

Compatible with the BlackDiamond 8806 switch	
Typical configuration	3 power supplies
Full configuration	6 power supplies
Input	Nominal input voltage: 100 to 240 V ~, 60/50 Hz, 8 A max Voltage input range/frequency range: 90 to 264 V ~ AC line frequency: 47 to 63 Hz Maximum input amperages: 5 A @ 200 V ~ (high-line) 8 A @ 90 V ~ (low-line) Input socket: IEC 320 C14 Minimum wire size: 16 AWG (1.31mm <sup>2</sup> ) copper stranded (pre-approved cord set for country of use)
Output	DC output: 48 V =, 18A/12 V =, 4A (high line) 48 V =, 11.5A/12 V =, 4A (low line) DC output power (W): 600 to 900 W
Power supply cord selection	Refer to <a href="#">“Selecting Power Supply Cords” on page 158.</a>
Operating conditions	Operating temperature: 0° C to 40° C (32° F to 104° F) Storage temperature: -40° C to 70° C Operating humidity: 10% to 90% relative humidity, non-condensing Operational shock: 30 m/s <sup>2</sup> (3 g)

**Table 23: Specifications for the DC SSI PS Model #60021 (1200 W DC PSU)**

Compatible with the BlackDiamond 8806 and BlackDiamond 8810 switches	
Typical configuration	3 power supplies
Full configuration	6 power supplies
Input	<p>Nominal input voltage: -48 V <math>\equiv</math></p> <p>Voltage input range: -40.5 V <math>\equiv</math> to -72 V <math>\equiv</math></p> <p>Input currents:</p> <ul style="list-style-type: none"> <li>-40 V <math>\equiv</math> @ 35 A</li> <li>-48 V <math>\equiv</math> @ 30 A</li> <li>-60 V <math>\equiv</math> @ 23 A</li> </ul> <p>Maximum in-rush current: Not more than 80 A for 5 ms</p> <p>Input circuit protection: 50 A</p> <p>Wire harness provided by Extreme Networks with each power supply.</p> <p>Extreme Part# 4340-00028</p> <p>Wire type: 8 AWG (10 mm<sup>2</sup>) listed tray cable, copper-stranded rated @ 90 C minimum</p> <p>Connector: Molex connector PN 42816-0312</p> <p>Connector pins: Molex connector pins PN 42815-0032</p>
Output	<p>DC output: 48 V <math>\equiv</math> , 24 A/12 V <math>\equiv</math> , 4 A</p> <p>DC output power (W): 1200 W</p>
Operating conditions	<p>Operating temperature: 0° C to 40° C (32° F to 104 °F)</p> <p>Operating humidity: 10% to 90% relative humidity, non-condensing</p> <p>Operating altitude: 0 m to 3,000 m (0 ft to 9,850 ft)</p> <p>Operational shock*: 30 m/s<sup>2</sup> (3 g), 60 shocks</p> <p>Operational office vibration*: 5 to 100-5 Hz @ 2/10 G, 0 to peak, 1 oct/min</p> <p>Operational random vibration*: 3 to 500 Hz @ 1.5 G rms</p> <p>* Worst case operational condition; not for continuous operation under this condition</p>

## Connector Pinouts

Table 24 describes the pinouts for a DB-9 console plug connector.

**Table 24: Pinouts for the DB-9 Console Connector**

Function	Pin Number	Direction
DCD (data carrier detect)	1	In
RXD (receive data)	2	In
TXD (transmit data)	3	Out
DTR (data terminal ready)	4	Out
GND (ground)	5	-
DSR (data set ready)	6	In
RTS (request to send)	7	Out
CTS (clear to send)	8	In

Figure 108 shows the pinouts for a 9-pin to 25-pin (RS-232) null-modem cable.

**Figure 108: Null-modem Cable Pinouts**

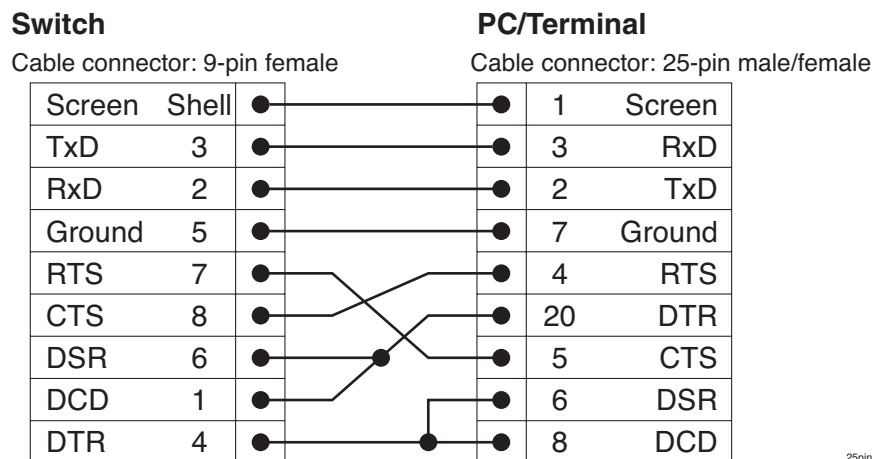
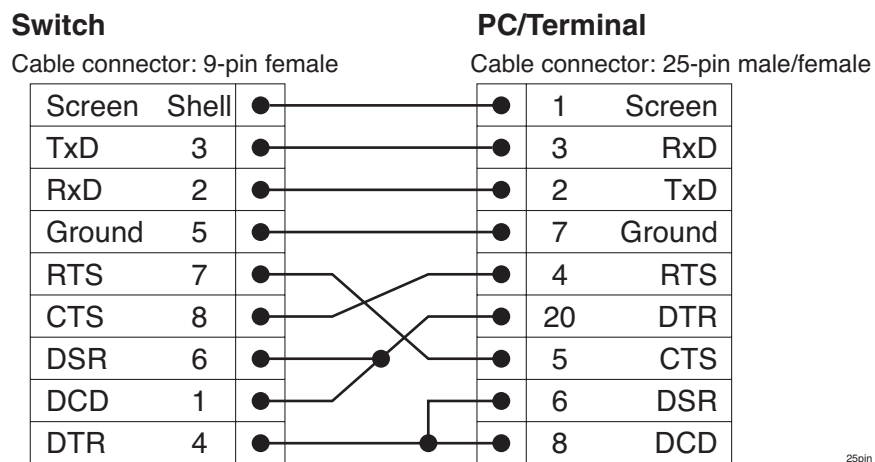


Figure 109 shows the pinouts for a 9-pin to 9-pin (PC-AT) null-modem serial cable.

**Figure 109: PC-AT Serial Null-modem Cable Pinouts**



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